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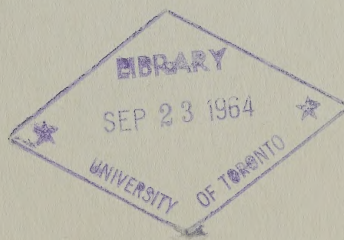
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Government
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GOVERNMENT ACTIVITIES IN THE NORTH

1963



ADVISORY COMMITTEE ON NORTHERN DEVELOPMENT

GOVERNMENT ACTIVITIES IN THE NORTH 1963

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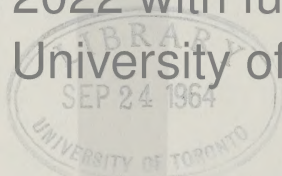
GOVERNMENT ACTIVITIES IN THE NORTH

- 1963 -

Advisory Committee on Northern Development
Department of Northern Affairs and National Resources
Ottawa, Ontario

June, 1964

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ADVISORY COMMITTEE ON NORTHERN DEVELOPMENT

Responsibilities To advise the government on questions of policy relating to civilian and military undertakings in Northern Canada and to provide for the effective co-ordination of all government activities in that area.

Review of 1963 Operations

Reports were made to the Committee on a variety of matters involving defence and civilian developments in the North. Among the more important of these was the report on the use of facilities at Frobisher left vacant as a result of the withdrawal of the Strategic Air Command establishment, United States Air Force. Recommendations were also made on the effects of the withdrawal of the Army from Fort Churchill planned for April 1, 1964, and the subsequent use of facilities there by other agencies.

A number of northern problems were resolved by discussion in the Committee, and recommendations were made in relation to the establishment of government policy. Emphasis continued to be given to the need for scientific research in the north, and the program of grants to assist northern scientific projects. The membership of the committee was:

The Deputy Minister of Northern Affairs and National Resources
(Chairman)

The Secretary to the Cabinet

The Under-Secretary of State for External Affairs

The Deputy Minister of Transport

The Deputy Minister of Finance

The Deputy Minister of Mines and Technical Surveys

The Chairman, Canadian Section, Permanent Joint Board on Defence

The Chairman, Chiefs of Staff

The Commissioner, Royal Canadian Mounted Police

The President, National Research Council

The Deputy Minister of Public Works

The Deputy Minister of Citizenship and Immigration

The Deputy Minister of National Health

The Deputy Minister of Defence Production

The Deputy Minister of Agriculture

The Deputy Minister of Fisheries

The Chairman, Defence Research Board

The Secretary, Advisory Committee on Northern Development

DEPARTMENT OF AGRICULTURE

Responsibilities Investigation of the agricultural potential in Northern Canada; research to determine the possibilities of gardening and farming; advice to other government agencies on matters related to agriculture in the Yukon and Northwest Territories, and other northern areas; soil, botanical and ecological surveys as required; study of the biology, distribution, and systematics of northern insects and plant diseases.

Long-term Plans

Continuation of agricultural research on the Experimental Farms at Fort Vermilion, Fort Simpson, Inuvik, Mile 1019 and Fort Chimo; appraisal of agricultural potential in the North on the basis of soil surveys and surveys of native vegetation; agro-climatic studies on a continuous basis at most centres; surveys and collecting of insects and fungi.

Review of 1963 Operations

Experimental work was continued on field and garden crops, beef cattle, and poultry at Mile 1019, Alaska Highway. Experiments included the production of cereal crops under various rotations and fertilizers and the production of certain vegetables and flowers using plastic shelters and mulches essential if tender crops are to reach maturity satisfactorily. Crops such as tomatoes, corn, peppers, beans, celery, etc., can be grown to maturity under cheaply constructed crop shelters. Tests with various forages, and carrying capacity studies of native and seeded pastures were continued. Work was begun to determine the feed consumption of beef cattle during the winter months in the new cattle barn and in the open feed lot constructed for this purpose.

At Fort Simpson experiments were continued with field and garden crops in relation to the climatic and soil conditions on the alluvial soil on the island and on the brown and grey-wooded soils on the mainland along the Liard River.

A limited number of vegetables were again tested at Inuvik where the permafrost is still receding with the use of the open areas for gardens. Using some commercial fertilizers alone or in combination with polyethylene mulches it was possible to grow most of the more common vegetables. As in previous years, ripe strawberries were harvested with permafrost only about 6 feet below the surface. Climatic data were collected and correlated with plant growth in this area.

At False River, near Fort Chimo, work was continued on alluvial soils over permafrost. Some vegetables were grown successfully in plastic-covered greenhouses, cold frames, and crop shelters, under plastic mulches, and in the open garden. Cereal crops failed to mature but abundant yields of green forage appeared a possibility.

A reconnaissance soil survey was conducted of the Hay River-Yellowknife Highway and of the Mackenzie Valley between Great Slave Lake and Fort Simpson. Reports were completed on the characteristics of some permafrost soils in the Mackenzie Valley and on the microflora of tundra soils from Inuvik.

Botanical collections and ecological studies were made of the Reindeer Ranges as a follow up to the survey made in 1957. Fungi and flowering plants were collected at seven sites along the western part of DEW Line between Cape Young and Komakuk Beach.

Entomological survey parties continued the program "Studies on Arctic Insects" at the Defence Research Board, Hazen Camp in Ellesmere Island. Collections were made of soil and plants for further examination and study in the Institute laboratories.

A survey was made of eastern Keewatin for the possibilities of kitchen gardens and greenhouses.

Plans for 1964

Field experiments will be continued at Mile 1019, Fort Simpson, Inuvik and at Fort Chimo. Special equipment to record micro climate will be installed at Mile 1019 and possibly at Fort Simpson.

Entomological and botanical collections will be continued in the area around Lake Hazen, Ellesmere Island.

Possibilities of agriculture in areas close to the 60th parallel declared by the provinces to be available for homesteading will be examined.

AIR TRANSPORT BOARD

Responsibilities The licensing of air carriers to operate commercial air services; the economic regulation of air carriers; investigations and surveys relating to the operation and development of commercial air services in Canada; advising the Minister of Transport on matters relating to civil aviation.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1963 Operations

The contracts of TransAir Ltd., Nordair Ltd., and Okanagan Helicopters for the provision of airlift in connection with the resupply of the Central and Eastern Sections of the DEW Line were extended for the period July 1 to September 30, 1963. At that time, the requirement for helicopter support was terminated. The fixed wing airlift requirement for the vertical resupply ex Winnipeg and Churchill for the period October 1, 1963, to June 30, 1964, was awarded by MATS, USAF, to TransAir Ltd., and the fixed wing requirement for the lateral resupply for the same period was awarded by MATS, USAF, to Nordair Ltd. The Board approved both contracts. Supervision and co-ordination continued of the contractual arrangements by Eastern Provincial Airways, (1963), Laurentian Air Services, Wheeler Air Lines (1960), and Okanagan Helicopters for providing the air transportation requirements of the USAF for the ADC (Gap-Pine) sites in Labrador during the U.S. fiscal year 1 July, 1963 - 30 June, 1964. Liaison was provided for Mid-Canada Line requirements.

The Board continued to deal with applications for additional air services in the North and to provide information on their availability. Agreement was reached to continue with the ATB survey of Canadian Government northern transportation requirements, begun in 1961, to determine whether more effective forecasting and co-ordination of requirements can be attained.

Plans for 1964

Normal planning to meet responsibilities

CANADIAN BROADCASTING CORPORATION

Responsibilities To provide a radio broadcasting service to the people of the North and to broadcast programs about the North on its networks.

Long-Term Plans

To improve the present broadcasting service on local stations, particularly in providing programs in the local Indian and Eskimo languages; and to provide a more adequate shortwave service to the North.

Review of 1963 Operations

In March, radio station CBDH, Uranium City, Saskatchewan, was converted to a low-power relay transmitter with the opening of the tropospheric-scatter system between Fort Smith and Uranium City. The station became part of the Mackenzie Network of the Northern Service with program centre at Yellowknife. A local reporter was appointed to provide local items of interest for broadcasting on the network.

On October 1, CFWH Whitehorse, Y.T., formerly with a power output of 250 watts, began broadcasting from a new transmitter of 1000 watts on a new frequency of 570 kc/s. Field strength measurements indicate that the coverage area of CFWH has been greatly improved and extended as a result of the new transmitter and antenna installations. Carcross, Carmacks, and other small localities within a 100-mile radius of Whitehorse are now receiving its signal.

The establishment of low-power relay transmitters at Destruction Bay and Beaver Creek in late December, and at Teslin early in the New Year, along with the extension of Yukon Network daily service from 17 to 18 hours, fulfilled plans for radio coverage in the Yukon Territory.

A shortwave antenna array design for the Northern Service at the CBC's shortwave plant at Sackville, N.B., was decided upon by a technical sub-committee. Its recommendation has been approved and included in the CBC's five-year capital plan.

A representative committee of the Board of Directors toured the Mackenzie District and the Yukon Territory from August 30 to September 3. They visited Northern Service stations at Yellowknife, Inuvik, Dawson, Elsa, and Whitehorse, and the settlements of Fort Simpson, Norman Wells, and Tuktoyaktuk.

As in the previous year, extensive coverage was given to the federal general election campaign. All candidates whose constituencies in whole or in part are served by Northern Service stations broadcast during the campaign. Some talks were in local Indian and Eskimo languages. Polling day was extensively covered locally and nationally. Special connections joined CFGB Goose Bay, CFFB Frobisher Bay, and CHFC Churchill to the CBC's networks for the occasion.

Special efforts were made to ensure widest possible coverage in the North of the Stanley Cup hockey playoffs and the Grey Cup game by extra short-wave transmissions and commercial landline connections to normally unconnected stations.

Extensive coverage was given of the summer session of the Northwest Territories Council held in Inuvik in mid-July. Detailed daily reports were broadcast on CHAK Inuvik, and tape-recorded programs were flown to Edmonton and Montreal for broadcast on the CBC English Network. The Yukon Territorial Council sessions in the late autumn were similarly covered by CFWH Whitehorse.

The Northern Service contributed programs during the year to CBC English Network, including news reports on the Hay River and Fort Simpson floods in early May, the Klaben-Flores air rescue in the Yukon in March, and the first conference on paving the Alaska Highway, Whitehorse, September 12. Two major national network programs originated in the North. For three days at the beginning of August programs of Trans-Canada Matinee were broadcast live from CFWH Whitehorse; on November 22 Issues and Questions, a young peoples' program, was produced on tape at Sir John Franklin federal school, Yellowknife, for later release to the full CBC English radio network.

Indian and Eskimo Language Programs

During the year programming in Indian and Eskimo languages was expanded. With the co-operation of Dr. H.C. Rolfe of the Manitoba Northern Health Services, local clergy, Manitoba's Community Development Branch, local Indian Affairs Branch representatives, and the Churchill Indian-Metis Association, CHFC Churchill began broadcasting in March four Indian-language programs weekly: two in Cree and two in Chipewyan. Eskimo language news reports, tape-recorded at Rankin Inlet, became a regular feature on CHFC whose signal reaches north into Keewatin District irregularly. CFWH Whitehorse added a second Loucheux broadcast to its schedule, featuring reports, interviews, Indian legends, and songs of interest to the Yukon Indian communities.

The Northern Service shortwave broadcasts in the Eskimo language were increased. Miss Ann Padlo, whose program Uqausi has been a regular weekly feature on Monday evenings (repeated on Fridays) since 1959, launched in early April a new program of light musical entertainment called Nunassiaqmeunut. On Tuesday evenings, "Frobisher Calling", prepared in Frobisher Bay in the Eskimo language, is broadcast on shortwave. A similar contribution in Eskimo prepared in Churchill is broadcast on shortwave Thursday evenings.

At the year's end, plans were being made to develop adult education programs in the Indian and Eskimo languages.

Plans for 1964

To extend the coverage of the Mackenzie Network by low-power relay transmitters at Pine Point and Fort Simpson when CNT facilities become available.

To develop a shortwave antenna array for northern transmissions.

To make preliminary plans for new studios necessitated by the expansion of the Yukon Network at Whitehorse.

To develop new programs in the Indian and Eskimo languages on shortwave and community stations.

CENTRAL MORTGAGE AND HOUSING CORPORATION

Responsibilities Design of housing, preparation of town development plans, and drafting of planning legislation as requested from time to time by the Department of Northern Affairs and National Resources. Financing of housing under the terms of the National Housing Act.

Long-term Plans

The facilities of the National Housing Act and the services of the Corporation will be made available as required.

Review of 1963 Operations

Lending Activities

Housing units financed in the North under the National Housing Act, 1954, totalled 43, a small increase over last year's total of 39. Of these, 33 were in the Yukon Territory and 10 in the Northwest Territories. Included in the loans approved for the Yukon were 10 rental units in Whitehorse for a loan of \$71, 135. All loans were made by Central Mortgage and Housing Corporation in the absence of funds for this purpose from private lenders.

The policy of granting loans by way of second mortgage over and above the amount available under the N.H.A. was continued. These funds were made available to offset the higher construction costs in the North and were provided by the Territorial Governments, with C.M.H.C. acting as agent in approving and administering the loans. The maximum amount available under this arrangement is \$2, 000 and the loan is amortized over the same period as the first mortgage. Since inception of the program in 1962, 26 second mortgage loans have been granted, 23 of which were in the Yukon Territory.

Several unique problems arose out of the flooding last spring of the town of Hay River. A number of homes being built with N.H.A. loans were affected and C.M.H.C. is attempting to assist those home-owners who want to relocate in the new town site. Special advancing techniques have been worked out and applications for loan increases are being considered where required.

Other Activities

In April the Corporation forwarded to the Department of Northern Affairs and National Resources the proposed development plans for Watson Lake and Haines Junction in the southern Yukon. Accompanying these plans were reports which summarized the survey material analysis and recommendations resulting from the study. A second report which recommended the following of certain procedures in the administration and implementation of these and future plans of other northern communities was also submitted.

Following the severe flooding of Hay River in May, the Corporation was requested by the Department of Northern Affairs and National Resources to prepare a plan for the relocation of the residential community. A preliminary report containing the Corporation's recommendations for the relocation program was submitted after a visit to the site by representatives of the Architectural and Planning Division. In mid-June, a plan was submitted for the first phase of development which included approximately 200 residential blocks and provision for commercial development, governmental uses, schools and other community facilities and amenities. This was followed in October by zoning proposals to enable implementation of the plan and recommendations in the preliminary report. The final report for Hay River should be completed early in the New Year.

In September, the completed development plan for Metropolitan Whitehorse was submitted to the Whitehorse Municipal Council, the Yukon Territorial Council and the Department of Northern Affairs and National Resources, together with preliminary drafts of a Municipal Zoning By-Law and a Territorial Ordinance to implement the plan and recommendations.

In August, the Corporation was requested to review the development plan for Fort Smith in the light of recent changes in the community. During a site visit in late August, discussions were held with local officials and representatives of various private interests, and a survey was made of the current situation. A report should be completed early in 1964.

In collaboration with the Ontario Research Foundation, the Corporation continued research in connection with the development of a self-contained sewage disposal system suitable for the single family dwelling. One type was a totally enclosed unit, aimed at problems encountered in areas of permafrost and difficult terrain where water was scarce and repeatedly re-using the effluent, thus eliminating all out-flow and the need for disposal.

One of these enclosed type units was installed for test purposes in 1962 and part of 1963 in an experimental house at the R.C.A.F. station, Rockcliffe. A modified and improved unit will be installed in another research house project at Rockcliffe early in 1964 and will be under test during that year and probably 1965.

In co-operation with the Department of Northern Affairs and National Resources, a specially designed larger type of the re-circulation sewage unit of the enclosed type was developed to handle six toilets at a school at Cape Dorset, N.W.T. The unit was installed and very recently came into operation but it is too early to comment upon its performance. This unit will be observed and tested throughout 1964 and probably 1965 and, if satisfactory, will remain in operation for a considerable period. Visits will be made to the site by appropriate personnel from the Ontario Research Foundation and others from time to time to check operation and performance. The first visit will probably be towards the end of January, 1964.

Plans for 1964

Work will be undertaken as required for the Department of Northern Affairs and National Resources or for other agencies of the government.

Lending activities will continue at a level determined by the demand for and the supply of mortgage funds.

DEPARTMENT OF CITIZENSHIP AND IMMIGRATION

INDIAN AFFAIRS BRANCH

Responsibilities The administration of the Indian Act, as amended.

Among its many important responsibilities is the social and economic development of the Indian population, the Indian Treaty obligations, the enfranchisement of Indians, and the administration of the estates of deceased or mentally incompetent Indians.

According to the Registered Indian Record, there were 5,624 Indians in the Northwest Territories and 2,127 in the Yukon as of October 31, 1963.

Long-term Plans

The majority of Indians in the North still depend for livelihood on the utilization of renewable resources. The Indian Affairs Branch will, therefore, continue to develop sound trapping and commercial fishing practices, in co-operation with the Department of Northern Affairs and National Resources and the Department of Fisheries, and will provide assistance and supervision for domestic fisheries.

In co-operation with the Department of Northern Affairs and National Resources, the employment program will continue to focus on these major objectives: developing existing employment opportunities for Indians who are qualified, able, and willing to take advantage of them; searching out and developing new employment opportunities in a wider range of activities; training and preparing Indians to enable them to participate more fully in the development of the North.

In the field of education, the Indian Affairs Branch will continue to arrange for the gradual admission of all Indian children in the Yukon Territory to schools operated under the Yukon Territorial Government.

Review of 1963 Operations

Resource utilization programs were continued throughout the north, with progress made in establishment of additional Indians in the Great Slave Lake summer fishery.

There was a marked improvement in fur prices in 1962-63, which resulted in increased trapping activity and generally increased revenues from this source.

An increase in the number of Indians requesting grubstake assistance was apparent, reflecting the increased interest in fur. Repayment was excellent in most areas.

A program of fishing yawl construction was undertaken at Hay River early in 1963, with twelve units completed and bringing to seventeen the number of Independent Indian fishing crews on Great Slave Lake. Complete reports on production and revenue have not been received, but preliminary reports are promising.

Assistance in the form of supervision and equipment was again made available to Indians to permit them to utilize fishery resources for domestic purposes both for human consumption and for dog feed. The production of fish for domestic purposes was probably again in the vicinity of 3, 000, 000 lbs. total in the Northwest Territories.

Seventeen freezers were in operation in the Territories to provide additional storage space to augment summer supplies of smoked and dried fish and game. Total capacity of these units exceeded 200, 000 pounds.

Indians were again employed by tourist lodges on Great Bear Lake to a total of thirty-one persons for the two-month season from July 1st to the end of August. In addition to guiding, some Indians were engaged as staff members, to the entire satisfaction of the camp operators, who have signified their intention of increasing employment of Indians in their operations.

Wage employment opportunities were exploited in a number of fields, including building construction, transportation, and the operation of schools, hospitals, and hostels. In addition, works projects were undertaken during the winter season under Departmental supervision. These included a road clearing operation along the Watson Lake - Ross River route, which provided employment to 105 men, including 91 Indians, and payrolls totalling almost \$50, 000. Community employment projects organized and planned jointly by Indian bands and Branch field staff and financed from appropriation, provided work in the construction of yawls for commercial fishing, logging operations and road brushing. Of the \$34, 000 and \$13, 000 allocated respectively to the Mackenzie and the Yukon, approximately 80% was spent for Indian labour.

The production of handicrafts increased and promises much as a home industry, particularly in the areas frequented by tourists during the summer season.

With the exception of 110 children attending classes at the Carcross Residential School, Indian children residing in the Yukon Territory attended Territorial Schools. There was an increase of 71 children attending the Territorial Schools

and the total is now 362. Of particular significance was the attendance of 28 Indian children at vocational training courses in Whitehorse. These children resided either at the Whitehorse or Yukon Hostels. A Federal contribution was made to the Territorial Government which provided for the enrolment of 30 Indian pupils in a non-Indian school at Carmacks.

During the current fiscal year, 99 applications for housing assistance in the Northwest Territories and Yukon Territory were approved. This included a separate amount of \$160,000 in the Supplementary Estimates to replace houses at Fort Simpson and Hay River destroyed by flooding. Other works of a minor nature were carried out in the various Agencies including such things as the installation of a summer water line at Fort Franklin, material for a summer water system at Fort Simpson, warehouses at Fort Good Hope, Hay River and Snowdrift.

Plans for 1964

Plans include continued orderly expansion of the trapping assistance programs to encourage utilization of more remote fur populations not found economical to exploit fully under conditions prevailing during the past few years, particularly in the range of the barrenground caribou. This, in conjunction with commercial and domestic fishing, may assist in broadening the economy to reduce dependence on a single game species.

The construction of an additional six yawls at Hay River is planned under the C. E. P. in continuation of the program of assistance to Indians to enable them to participate more fully in the commercial fish harvest. Plans are also being formulated for expansion of Indian participation in commercial fishing on other inland waters apart from Great Slave Lake.

Advantage will be taken of any opportunities for employment on railway or highway construction, or on other projects financed from public funds. Further efforts will be made to place selected Indians in permanent employment both in the public service and private industry. The handicraft program will be further expanded.

Machinery and equipment will be supplied to promote utilization of natural resources as a means of developing Indian skills which, at the same time, enables them to improve housing standards. Tractors will be supplied at Old Crow and Fort Resolution; a blade winch and trailer will be supplied at Fort Franklin; logging equipment will be furnished at Forts Franklin, Good Hope, and McPherson, and scows will be built at Aklavik, McPherson, Norman, and Franklin.

The present policy of endeavouring to arrange for an increasing number of Indian pupils to attend Territorial Schools will be continued. Negotiations are currently in progress for the enrolment of an additional number of Indian pupils in a Territorial School at Dawson.

Sixty Indian welfare houses will be built in the north.

IMMIGRATION BRANCH

Responsibilities Implementation and administration of the Immigration Act and Regulations in the North as elsewhere in Canada, including admission of immigrants, non-immigrants, returning Canadians, and returning residents, and deportation of undesirables. In implementing the policy of the Government in respect of immigration, the Immigration Branch considers that it has an active part to play in promoting the development of the economy of the whole country including the North. This includes agriculture, natural resources, large scale industries, construction projects, small industries, businesses and services.

Long-term Plans

Planning to meet responsibilities including a continuous assessment of the opportunities that are suitable for and will attract immigrants to the Northern part of Canada.

Review of 1963 Operations

Thirty ports of entry operated in the Far North. One was a full-time Immigration office, six were Customs offices and the remainder were maintained under an arrangement whereby officers in charge of R. C. M. P. detachments, heads of certain Canadian meteorological stations and commanding officers of certain R. C. A. F. stations have been designated as Immigration Officers in Charge and Special Inquiry Officers to administer the Immigration Act and Regulations. At these ports of entry, immigration examination was made of 95,423 persons comprised of 14 immigrants, 10,481 returning residents, 84,928 non-immigrants. No person was refused admission.

One hundred eighteen immigrants were placed in employment in the Yukon and Northwest Territories by Immigration Officers. Three immigrant businesses were reported as having been established in the Yukon. These enterprises provided employment for 26 workers, (owner-operators included) and represented a total purchase price of \$309,500 of which \$121,500 was paid down.

The Medical-Welfare Agreement between the Federal Government and the Northwest Territories, covering assistance to immigrants who become indigent through accident or illness during their first year's residence in Canada, was continued.

Plans for 1964

Similar to 1963.

CROWN ASSETS DISPOSAL CORPORATION

Responsibilities

- (i) Disposal of surplus Crown assets declared by Government departments or agencies operating in the North.
- (ii) Disposal of surplus United States Government-owned surplus property located in Northern Canada, under the provisions of Canadian Note 140 dated August 28th, 1961 and United States of America Note 52 dated September 1st, 1961.

Long-term Plans

Normal planning to meet requirements on disposals of surplus Crown-owned assets and special operations planning based on changing requirements caused by the phasing out of certain United States Government operations in the Far North.

Review of 1963 Operations

CADC representatives carried out inspection and disposal of surpluses in the Yukon Territory and District of Franklin (Baffin Island). A special disposal operation required a CADC representative to carry out disposal operations at Tuktoyaktuk, District of Mackenzie.

Plans for 1964

Owing to lack of markets for disposal of surplus at many locations closed down by the United States Government between the Alaska-Canadian Border on the West and Baffin Island on the East, a major disposal operation is being planned to take effect during the navigation season 1964 to clean beach heads and sites.

DOMINION BUREAU OF STATISTICS

Responsibilities . Procurement and analysis of statistics for the Northwest Territories and the Yukon and their publication in the Bureau's regular reports.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1963 Operations

Census

Since the 1961 Census operations in the North were completed by December 31, 1961, the Dominion Bureau of Statistics had no occasion to carry out any Census operations in the Canadian North.

Law Enforcement

The statistics of cases heard by the Territorial Courts and Police Magistrates' Courts dealing with indictable and summary conviction offences and juvenile delinquency; appeals heard by the Courts of Appeal, the movement of guardroom prisoners, and the police statistics of the R.C.M.P. as reported to the Dominion Bureau of Statistics for the Yukon and Northwest Territories were published.

Health

The Annual Returns of Hospitals were distributed to the hospitals in the Northwest Territories through the Territorial Hospital Insurance Services Board of the Department of Northern Affairs and National Resources. The Government of the Yukon Territory distributed and collected the Returns for the hospitals in the Yukon. Hospitals to which Returns were distributed numbered 25 in the Northwest Territories and 5 in the Yukon.

Public hospitals in the Northwest Territories (7 general and 1 tuberculosis) submitted data regarding the bed capacities, movement of population, personnel, facilities and finances, while the federal hospitals (13 nursing stations and 2 general) and two private hospitals, submitted similar data except finances. In the Yukon, 2 public general hospitals, 1 federal general hospital, and 2 federal nursing stations reported in the same fashion.

The final tabulations for the Yukon Hospital Insurance Service Morbidity Program 1962 were released to the Yukon Hospital Insurance Service and the Department of National Health and Welfare. The 1963 admission-separation documents are being processed by the Department of National Health and Welfare and tabulations for 1963 will be run by the Department of National Health and Welfare.

The Yukon Superintendent reported, on a four-weekly basis, all cases of notifiable diseases in his Territory. Weekly reports covering the incidence of venereal diseases in the Northwest Territories were received from the Alberta Department of Health and the Indian and Northern Health Services of the Department of National Health and Welfare. These data were incorporated into the Dominion Bureau of Statistics' Annual Report of notifiable Diseases; in addition, the venereal diseases data were included in the Dominion Bureau of Statistics' Notifiable Diseases Weekly Summary.

Hospitals in the Yukon and the Northwest Territories reported information on tubercular patients admitted, re-admitted, and discharged during the year. Since January 1961, a new system of case notification from the provincial tuberculosis case registers has been in operation in Canada. The Yukon and the Northwest Territories co-operate in this system but, in the absence of a case register, their tuberculosis notification cards are submitted monthly to the Dominion Bureau of Statistics by the Indian and Northern Health Services of the Department of National Health and Welfare. Information from the case notification system formed part of the Dominion Bureau of Statistics' Monthly Reports, "Incidence of Tuberculosis".

Vital Statistics

Vital Statistics for the Northwest Territories and Yukon were compiled from registrations of births, stillbirths, marriages, and deaths, supplied by the Department of Northern Affairs and National Resources, and the Commissioner

of the Yukon Territory. Owing to such local problems as distance and communications, it was not possible, prior to 1956, to have complete returns sufficiently early or tabulated in sufficient detail, to permit combining with provincial data for publication of national totals in the regular vital statistics reports. Consequently they were published as an appendix to the regular series. Vital statistics data for these areas are now being compiled in similar detail to, and published in, the national totals on the same basis as provincial data.

Tabulations of certain vital statistics for recent years were supplied to the Northwest Territories and the Yukon Administrations.

Both the Yukon and N. W. T. administrations are separately represented in the vital Statistics Council for Canada. This body, composed of provincial and territorial officers responsible for recording vital events meets annually to discuss legislative, registration and statistical matters.

Education

Since 1955 reports on educational statistics of the same type as used in the Provinces have been collected from the public schools of the Yukon through the Superintendent of Schools at Whitehorse. The same basic reports on teachers and enrolment have been adopted for the schools in the Northwest Territories and have been collected annually by the Department of Northern Affairs and National Resources beginning with the school year 1959-60. These include a report on promotion and non-promotion of pupils similar to that used for the Indian schools but additional to the report forms used for the public schools of the provinces. The public school and the Roman Catholic separate school at Yellowknife and the Roman Catholic Separate School at Hay River report in the same manner as federal schools.

Preliminary figures on numbers of teachers and enrolment were collected early in the fall by the Education Division of Northern Administration for their own use and for the Dominion Bureau of Statistics.

The Department of Northern Affairs and National Resources provided some information on expenditures on education including the finances of the Public School Board at Yellowknife. The Roman Catholic Separate School at Yellowknife reported finances direct to the Education Division.

Expenditures on education by the Territorial Governments of the Yukon and the Northwest Territories are extracted from territorial public accounts.

Statistics on Elementary and Secondary education in the Yukon and the Northwest Territories are now being shown in all publications of the Education Division relative to this field.

Foreign Commodity Trade and International Travel Movements

Annual statistics on foreign commodity trade through customs ports in the Yukon were published in total for both exports and imports, with monthly details available on request. Statistics on international travel movements through ports in the Yukon were published monthly. These international statistics were obtained through customs offices at ports in the Yukon Territory; data on commodity trade and automobile movements were recorded by the Department of National Revenue and compiled by the Dominion Bureau of Statistics, and other travel movements were reported by the Department of Citizenship and Immigration.

Industrial Activity

The Industry Division regularly collects statistics for the Northwest Territories and the Yukon on electric power, logging, manufacturing, and mining. Fishing statistics are collected for the Northwest Territories and pipeline statistics for the Yukon.

The confidential clauses of the Statistics Act preclude publication of the statistics by industry and territory except for mining, fishing, and pipelines. To avoid disclosure, statistics for the two areas combined are published in the case of both the electric power and manufacturing industries, and with British Columbia in the case of the logging industry.

The Merchandising and Services Division collected statistics from a sample of retail and wholesale trade businesses for the purpose of estimating the volume of such business activities. Separate figures are not published for the Yukon and Northwest Territories. In the case of Retail Trade, the Yukon and Northwest Territories are included with British Columbia. In the case of Wholesale Trade, figures are published only for Canada with no breakdown by regions. Statistics were also collected from hotels, power laundries and dry cleaning plants and motion picture theatres for measuring the extent of these business activities. The data are combined with those of British Columbia for publication except in the case of theatres where figures are published for the Yukon and Northwest Territories.

Food Costs

In connection with a review of Isolation Allowances for Federal Government employees, surveys of comparative food and domestic fuel and utility costs were analysed for approximately 20 settlements in the Yukon and Northwest Territories.

Public Finance

Statistics on actual revenue, expenditure, and debt of the territorial governments have been included in the Dominion Bureau of Statistics' annual reports on "financial statistics of provincial governments - actual" for a number of years. The data are obtained from the Public Accounts of the territorial governments, supplemented by information supplied by territorial treasury officials.

Quarterly statements of the revenue and expenditure of the Northwest Territories government were received regularly from the Department of Northern Affairs and National Resources and incorporated into the Dominion Bureau of Statistics' quarterly statements of government transactions related to the National Accounts.

Actual financial data on revenues, expenditures, assets, and liabilities for the four incorporated municipalities in the territories were obtained directly from the municipal officials and included in the Dominion Bureau of Statistics' annual reports "financial statistics of municipal governments - actual".

Territorial Taxes

Data on rates of the principal taxes levied by the two territorial governments and their four incorporated municipalities were included in the Dominion Bureau of Statistics' annual report "Principal Taxes and Rates".

Liquor

Data on liquor sales by type, and on profits of the liquor boards, were obtained from the liquor board authorities in both territories for inclusion in the Dominion Bureau of Statistics' annual report "Control and Sale of Alcoholic Beverages in Canada".

Transportation and Communications

Highway statistics for the Yukon Territory and the Northwest Territories were provided by the Department of National Defence, Northern Affairs and National Resources and officials of the local municipalities. Also reported by governmental authorities were statistics of motor vehicle registrations, gasoline and diesel oil sales, traffic accidents involving vehicles, and revenues derived from licences and taxes arising out of the operation of motor vehicles. Freight and passenger statistics were supplied by common and contract motor carriers operating within and in and out of both territories.

Statistics of railway operations in the Yukon Territory were provided by the White Pass and Yukon Route.

Reports of civil aviation were received regularly from carriers located in, and those servicing, the Yukon Territory and Northwest Territories.

Water transportation reports were submitted regularly by companies operating cargo vessels on the Mackenzie River system. Vessels entering the ports of the Northwest Territories reported particulars of cargoes loaded and unloaded.

Telegraph and cable statistics for the Yukon Territory were obtained from the C.N.R. Telegraphs in Montreal.

Telephone statistics were provided for both territories by the Bell Telephone Company, the Yellowknife Telephone Co., and the C.N.R. Telegraph.

Dominion and Territorial Payrolls

Employment and payrolls of the Government of Canada and its Crown corporations, for services carried out in the Yukon and Northwest Territories, were covered by reports submitted each month by the responsible departments and corporations and in some cases by means of official documents of the Civil Service Commission, the Treasury Board, and the Privy Council.

The government of the Yukon Territory and its Crown Corporations provided monthly statements of their employment and payrolls. The government of the Northwest Territories submitted a quarterly statement on staff of the Liquor Commission. Departmental services of the Northwest Territories'

government were performed by employees of the Government of Canada, and these employees were reported in statistics for the federal government departments.

At present no information is collected with regard to municipal government employment and payrolls in the Territories, and it is not presently known when such a survey will be undertaken.

Other

Personal Income for the Yukon and the Northwest Territories was included in the National Accounts, Income and Expenditure. In 1962, it was \$47 million out of \$30,794 million, i.e. about one-seventh of one per cent of Canadian personal income.

Net value of commodity production data are available up to 1961 from 1926 for the fishing, trapping, mining, and electric power industries, from 1939 for manufacturing, and from 1940 for forestry (see Survey of Production report, Vol. 41).

Monthly data on employment, payrolls, and man-hours were collected from a few industrial establishments in the areas engaged in mining, construction, transportation, storage, communication, and catering, and a few in manufacturing. Statistics for these areas were not separately published, but were contained in the Canada figures in "Employment and Payrolls" and "Man-hours and Hourly Earnings".

Data were obtained on the numbers and values of pelts taken in the regions for the Fur Season 1962-63. In the case of the Northwest Territories, the number of pelts exported and the prices paid to trappers were supplied by the Deputy Commissioner. In the case of the Yukon Territory, the Commissioner supplied the number of pelts exported and prices were obtained from Messrs. Taylor & Drury Ltd., Whitehorse, Western Canadian Fur Auction Sales Ltd., Vancouver and Seattle Fur Exchange, Washington.

Plans for 1964

No different method of collection of data with the hospitals in the North is contemplated. Hospital morbidity statistics for the Yukon Hospital Insurance Services Commission will probably be discontinued. No basic changes in the present arrangements are contemplated.

The Industry Division will collect statistics for the Northwest Territories and the Yukon on electric power, logging, manufacturing, and mining. Fishing statistics will be collected for the Northwest Territories and pipeline statistics for the Yukon. The statistics will be published in as much detail as possible under the confidential clauses of the Statistics Act.

Approximately the same program will be carried out by the Merchandising and Services Division as in 1963 except that the survey of Wholesale Trade will be expanded so as to make possible the publication of data for the principal economic regions of Canada, i. e., Atlantic Provinces, Quebec, Ontario, Prairie Provinces and British Columbia (including the Yukon and Northwest Territories).

Analysis of the comparative food and fuel cost situation of Federal Government employees in about 20 additional settlements will be completed. These results will be used to assist in determining appropriate allowance levels for civil servants at isolated places.

ELDORADO MINING AND REFINING LIMITED

Responsibilities Maintenance, on a caretaker basis, of a shut-down mining plant at Port Radium on the south-east shore of Great Bear Lake.

Long-term Plans

None.

Review of 1963 Operations

Maintenance continued. The facilities at Port Radium were used as an operating base for a construction crew engaged in the installation of a telecommunication site nearby. The facilities were also used by a number of Eldorado employees engaged in the salvaging of spare parts, supplies, and equipment at the property, and the preparation of these for shipment to Eldorado's Saskatchewan mining property and elsewhere.

Plans for 1964

Caretaking of the Port Radium plant will continue. There is a possibility that part of the facilities may be leased to a mining company which proposes to operate a small silver property nearby.

EXTERNAL AFFAIRS

The Department of External Affairs has supplied the following statement regarding negotiations with the United States of America concerning the Haines Road. Other U.S. activities described in earlier reports whose status did not change during the year are not included.

Winter Maintenance of the Haines Road

In a Note dated October 24, 1963 the Department of External Affairs informed the United States Embassy that the Government of Canada had approved in principle the concept of endeavouring to keep the Haines Road open during the winter months on an experimental basis for a trial period of one year. The Embassy was also informed that the Department of Public Works of Canada had been granted authority to negotiate directly with the State of Alaska for the rental of road maintenance equipment in order to keep open on an experimental basis during the approaching 1963-64 winter, that section of the Haines Road not now kept open under other agreements. The Embassy was accordingly requested to indicate whether the United States agreed to the conclusion of arrangements between the State of Alaska and the Canadian Department of Public Works for the rental of road maintenance equipment for this purpose.

On October 30, 1963, the United States Embassy replied to the above Note, informing the Department that the Government of the United States had no objection from the standpoint of policy aspects to the conclusion of an arrangement or contract between the State of Alaska and the Canadian Department of Public Works for the rental of equipment for maintenance on an experimental basis during the winter of 1963-64 of that part of the Haines Road not now kept open. The Embassy added that the form and legal aspects of the proposed arrangement or contract were, of course, appropriately for the two parties to determine.

DEPARTMENT OF FISHERIES

CONSERVATION & DEVELOPMENT AND INSPECTION SERVICES

Responsibilities Conservation, protection and development of fisheries through enforcement of the Fisheries Act, Fish Inspection Act, and their regulations.

Long-term Plans

To encourage the development of commercial, sport, and domestic fisheries wherever conditions are suitable, having regard to markets, transportation, access, and other factors. To promote greater utilization of fishery products by inspection and assistance in the development of technological processes to obtain consistently high quality. To conserve and maintain the desirable fish populations by application of modern conservation measures whenever necessary.

Review of 1963 Operations

The Department's establishment at Hay River continued to maintain its close control over the major fishery in Great Slave Lake. Fishery Officers worked far afield from this base in connection with the eight control areas of the expansion program in other lakes of the Territories. Five sub-areas with realistic quotas were established in the Mackenzie Delta area with attendant patrols. In the Northwest Territories lake expansion program, the commercial fishing industry has been attracted to a number of areas opened to exploitation. Much concurrent management control work and the collection of scientific data was carried out.

There continued to be close collaboration with the Department of Northern Affairs and National Resources in its efforts to expand sport and commercial fisheries. These efforts included, in addition to certain relatively small programs, substantial fisheries and marine mammal programs in the Mackenzie Delta area, the Keewatin District bordering Hudson Bay, Cambridge Bay, and Frobisher Bay.

The patrol vessel "Marila" and a fast fibreglass outboard craft carried out regulation enforcement on Great Slave Lake assisted by a small fleet of snow-mobiles. Here and in other areas extensive use was made of chartered aircraft. The obsolete vessel "Mareca" was replaced late in the season by a new diesel-powered fibreglass vessel of long range capability, named "Rae Point".

The technical section continued its sport fish development program in the Yukon Territory with the transplant of 127,000 rainbow trout eggs into a number of lakes.

As an extension to this program the Hanson Lakes system received chemical treatment for the removal of coarse fish species. In addition to this field work, a comprehensive study was completed on the possible effects of the Rampart Dam proposal on Canadian interests in the Yukon River.

Plans for 1964

Continuation of the expansion program will require close collaboration and liaison with scientists of the Fisheries Research Board and will entail a further increase of activities by Fishery Officers in connection with protection of the resource, quota enforcement, and ensuring proper collection of statistical catch material and scientific data. It is anticipated also that preliminary developments will take place by the Department of Northern Affairs and National Resources in the direction of the fisheries potential of a very large lake on Baffin Island and in the adjacent sea areas.

The program of sport fish development in the Yukon Territory will be continued with further rainbow trout introductions to lakes of the Mayo-Elsa area.

Inspection Service activities will be similar to those in 1963.

FISHERIES RESEARCH BOARD OF CANADA

Responsibilities Investigations of the marine, freshwater, and anadromous animal resources of the Canadian Arctic, involving biology and utilization. Study of biological oceanography in relation to these resources.

Long-term Plans

To continue and expand fish and marine mammal studies, and to advise on the exploitation of Arctic marine and freshwater resources.

Review of 1963 Operations

Exploratory fishing in Darnley and Franklin Bays of the western Arctic was continued from the M.V. "Salvelinus." Large numbers of Greenland cod (*Gadus ogac*) were encountered.

A limnological and fisheries survey of Great Bear Lake carried out from the M.V. "Radium Gilbert" was able to sound and map most of McVicar, McTavish, and Keith Arms. It appears that fish inhabit the whole of the lake. Lake trout were gill-netted at all locations down to a depth of 1,350 feet.

Biological data were taken on fish of Great Slave Lake by sampling the commercial catch in both the summer and the winter fisheries. An experimental trout angling program was completed at Taltheilei Narrows.

An investigation of the fishery resource of western James Bay was carried out in conjunction with an experimental fishery under the supervision of the Division of Indian Affairs. Whitefish and lake herring were the two principal species caught but the total catch and catch/unit of fishing effort was low.

A study was made of the land-locked arctic char population in "Keyhole" Lake near Cambridge Bay during the summer and late fall. Preliminary investigation of this 118-acre lake indicates a total population of 6,000 fish over 20 cm in length.

The Eskimo co-operative arctic char fishery of Frobisher Bay, sampled through its duration, showed a reduction in catch per unit of fishing effort for the period 1958 to 1963. The data suggest that the increased fishery during this period is

largely at the expense of the accrued stock since the average age and size of the catch during this period of time has remained virtually unchanged.

A second year's collecting from the net fishery for beluga or white whale at Whale Cove, northwest Hudson Bay resulted in 60 additional specimens. A visual estimate of numbers showed about 3,000 animals present between Cape Churchill and the Tha-Anne River, indicating that the stock is at a high level following the relative relaxation of hunting in the period 1960 to 1962.

Narwhal studies started at Pond Inlet in June resulted in the capture of 26 narwhal, 22 of which were taken by nets. The netting of these animals was an innovation and proved very successful over the conventional hunting techniques so long in vogue. The maximum local utilization of 200 narwhal can probably be increased without depleting the present stocks.

Board staff took part in the 1963 Environmental Survey of Greenland waters, planned by the International Commission for the Northwest Atlantic Fisheries. The part of the survey in which the Board participated involved the Labrador Sea and Davis Strait. The main purpose was to determine the distribution and drift of fish eggs and larvae.

Zooplankton and phytoplankton samples were obtained from Kane Basin, and Smith and Jones Sounds.

Plans for 1964

The biological survey of Great Bear Lake and the sampling of fish in Great Slave Lake will continue.

The fishery potential of James Bay will be explored further.

Narwhal studies will be continued and studies on Greenland shark and halibut will be started at Pond Inlet.

The exploratory program with the M.V. "Salvelinus" will move to Coronation Gulf.

A survey will be begun to examine the arctic char potential at Nettilling Lake, Baffin Island.

FORESTRY

Responsibilities: Preparation of forest inventories and formulation of forest management plans for lands administered by the Crown; carrying out forest insect and disease surveys; advising on protection from these causes of forest damage, and on forest fire protection.

Long-Term Plans

To determine the potential of the forest resources of the north, and to assist in the preparation of plans for their protection and utilization.

Review of 1963 Operations

Forest Entomology and Pathology Branch

In the Mackenzie District, operations featured a combination of air, boat and ground surveys employing two or four technically trained persons at different times from June to September. A one-half ton panel truck was freighted in for the first time to Ft. Smith for survey work along the upper Slave and lower Peace rivers. Apart from general surveys of forest pests, special attention was paid to the spruce budworm and larch sawfly. Combined air and boat operations were involved in budworm surveys along the Slave and Mackenzie rivers. Larch sawfly surveys were carried out mainly with aircraft. A bark beetle outbreak near Big Island in the Peace River was surveyed for the first time. During the year about 3,800 miles were travelled by truck, 2,950 by boat and 2,400 miles by charter aircraft.

In the Yukon Territory about 2,500 miles were covered by truck for ground surveys along the Alaska Highway, and Dempster, Dawson, Mayo, Canol, Boundary, and adjacent roads. No aerial surveys were conducted although normally about 10 to 12 hours are flown usually by fixed wing aircraft. A 2-day waterway survey on the Yukon River was made in cooperation with the Canadian Wildlife Survey.

Forest Research Branch

There were no field parties in the Northern Territories. This was a year of consolidating and analysing the field data taken in 1962. The work involved ecological studies of the origin, structure and rooting habits of white spruce reproduction following fire and logging in the Boreal Forest. One paper concerned with previous field work by the Forest Research Branch in Northern Canada was published. Two other reports dealing with studies of the northern forests were completed and are now in press. These reports are listed below.

Jeffrey, W.W. 1963. Soil temperature measurements in Forests of North-western Canada. Ecology Vol. 44. No. 1.

Jeffrey, W.W. 1963. Forest types along lower Liard River, Northwest Territories. Canada Department of Forestry, Forest Research Branch. In Press.

Wagg, J.W.B. 1963. White spruce regeneration on the Peace and Slave River lowlands. Canada Department of Forestry, Forest Research Branch. In Press.

Plans for 1964

Forest Entomology and Pathology Branch

In the Mackenzie District spruce budworm surveys will be continued with greater emphasis on damage appraisal. The Big Island bark beetle outbreak will be investigated in greater detail. The larch sawfly outbreak will again be surveyed with aircraft. General surveys are planned for north of Yellowknife to the tree line using aircraft.

Forest Research Branch

One field party of a research officer and one student will spend four weeks in the vicinity of Hay River and Fort Providence collecting further ecological data for studies of occurrence and development of white spruce reproduction.

DEPARTMENT OF JUSTICE

Responsibilities The administration of justice in the Territories, including the organization and maintenance of territorial courts of civil and criminal jurisdiction; the appointment of judicial officers, Justices of the Peace, Magistrates, Juvenile Court judges, and related personnel; the direction and conduct of court proceedings on behalf of the Crown, including prosecutions under the Criminal Code and the Territorial Ordinances.

Long-term Plans

To improve, develop, and organize the administration of justice in the Territories in such a manner that, at the appropriate time, it may be transferred to the Territorial working system. The "administration of justice" in this context includes the organization of the courts, the conduct of criminal and civil litigation on behalf of the Crown, and all related matters.

Review of 1963 Operations

Criminal proceedings were conducted by Crown counsel, when necessary, before the respective superior courts, Justices of the Peace, and Police Magistrates, the last-mentioned also acting where appropriate as Juvenile Court judges.

Proceedings which were not held in the larger centres were dealt with by local Justices of the Peace or when appropriate by the Magistrates and Superior Court justices on circuit. The day-to-day administrative duties respecting the courts were carried out by the clerks of the court and sheriffs.

Plans for 1964

To station a senior officer of the Department in the Yukon Territory, and possibly in the Northwest Territories. To take steps to amend the Juvenile Delinquents Act in both Territories.

DEPARTMENT OF LABOUR

Responsibilities Conciliation and other services for maintaining good industrial relations; administration of the fair wages policy, fair employment practices, annual vacations with pay, and female employees equal pay legislation; promotion and administration of the municipal winter works incentive program; sale and administration of government annuities; compensation to government employees for occupational injury or illness; development, promotion, and coordination of technical and vocational training programs; surveys of wage rates, hours of labour, and other working conditions.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1963 Operations

Industrial Relations

Two applications from trade unions for certification of bargaining agents for employees of companies in the Yukon and Northwest Territories were investigated. Two industrial disputes involving a company and trade union in the Yukon and a company and a union in the Northwest Territories were mediated. Several complaints concerning vacation with pay were processed.

Fifty-eight "fair-wage" schedules in the Northwest Territories and 17 in the Yukon were established for federal government construction contracts, and 639 recommendations were made for establishing wage rates for prevailing rates of employees of the federal government.

Technical and Vocational Training

Consultation between officers of the Technical and Vocational Training Branch and officials of the Department of Northern Affairs continued on the development and operation of vocational training facilities in Northern Canada. The governments of both territories continued to seek advice and assistance from the Branch regarding the operation of vocational training programs. The

Government of the Northwest Territories will expand the Sir John Franklin School at Yellowknife to provide five additional classrooms and a mining shop. In addition to the mining facilities being provided, terminal vocational business training courses will also be established.

Officers of the Training Branch provided advice and assistance to the Northwest Territories with regard to the development of an apprenticeship ordinance. This Territorial legislation became effective on November 17, 1963.

The Government of the Yukon Territory continued to consult with the Branch regarding training matters and the program established in the new trade school at Whitehorse.

Accident Prevention and Compensation Branch

Claims of federal government employees, regularly working in the Yukon and Northwest Territories for compensation for occupational accidents or diseases were received, adjudicated, and paid by the Alberta Workmen's Compensation Board, under a federal-provincial agreement. A total of 525 claims was received and disbursements were \$83,087.00.

Economics and Research Branch

Two annual surveys were conducted - one on wage rates, salaries and hours of labour, the other on working conditions - covering 25 establishments in the Yukon Territory and 28 in the Northwest Territories. Not included in these figures are two corporations - the Northern Canada Power Commission and the Royal Bank of Canada whose returns cover all localities served in both territories. A file of collective agreements covering employees in the North was maintained.

Annuities

No statistics are available on the number of government annuities sold in the North but it is believed to be small. Sales and other business relating to government annuities were carried out by correspondence.

Municipal Winter Works

During the winter of 1962-63 one municipality in the Yukon and eleven in the Northwest Territories carried out projects under the Municipal Winter Works Incentive Program. The estimated costs of these projects were \$8,000 and \$48,000, respectively. No projects have as yet been submitted for the winter

of 1963-64 by municipalities in the Yukon, but eight municipalities in the Northwest Territories have submitted projects with an estimated cost of \$38, 000.

Under the Winter House Building Incentive Program, applications have been submitted in respect of eight houses being built during the winter in the Yukon and twenty-two houses being constructed during the winter in the Northwest Territories.

Plans for 1964

Normal operations, with some expansion in training services.

DEPARTMENT OF MINES AND TECHNICAL SURVEYS

DOMINION OBSERVATORIES BRANCH

Responsibilities To extend to Northern Canada the same geophysical research and mapping techniques used in the South. The Gravity Division obtains data for use in geodetic research problems and for studies of regional and crustal features. The Geomagnetic Division measures the geomagnetic field, operates a network of observatories, and conducts other research activities relating to the geomagnetic field. The Seismological Division operates seismograph stations at Alert, Mould Bay, Resolute, Coppermine, and Frobisher and, in co-operation with the United Kingdom, operates a seismic array at Yellowknife.

Long-term Plans

To continue the above activities with immediate expansion of conjugate point studies and gradual general expansion in the field of geomagnetism. To complete regional gravity coverage of Northern Canada, to investigate anomalous areas in detail, and to analyse and interpret the data. To construct seismographic stations at Whitehorse, Baker Lake, Hall Lake, Port Harrison, and Churchill and to investigate possible meteorite craters and other interesting geological structures.

Review of 1963 Operations

Magnetic and seismic observatories at Resolute Bay, Mould Bay, Alert, and Baker Lake, operated continuously. An airborne three-component survey of the geomagnetic field covering 2, 100, 000 square miles with flight lines 100 miles apart for a total of 33, 000 line miles of vector information north of latitude 70° was carried out. Research into magneto-tellurics at Alert and Lake Hazen occupied one employee for three months and research into the spatial changes of magnetic variations near Prince Patrick Island occupied three employees for two months in co-operation with the Polar Continental Shelf Project. In connection with the Project, a total of 350 new gravity stations were established, extending the regional gravity coverage of the western Arctic Islands to include parts of Devon, Axel Heiberg, and Ellesmere Islands. This included a detailed traverse over the Sverdrup Glacier on Devon Island to determine the thickness of the ice. In northern Ontario, approximately 4, 500 regional gravity stations were established north of latitude 48° and east of longitude 92° including the

sedimentary basin of the Hudson Bay lowlands. In northern Saskatchewan, gravity mapping was extended southward from Lac La Ronge. Detailed gravity observations and density sampling were carried out along a line extending 200 miles northwest of Lac La Ronge to provide further information on the anomalies there. Additional ties in eastern Quebec, Labrador and Baffin Island were made using scheduled airlines for transportation. In co-operation with the Department of Transport, the icebreaker "N.B. MacLean" was used during September to establish 106 gravity stations over Mansel, Charles, and Digges Island, parts of the Ottawa, Hopewell, and Belcher Islands and a small area in the vicinity of Churchill, Manitoba. Investigations on probable fossil meteorite craters continued with the sinking of some 4,000 feet of drill holes at Clearwater Lake east of the Richmond Gulf during January to April. About 240 gravity and magnetic observations were made on the lake ice. Preliminary investigations were undertaken over three other suspected craters, two in northern Quebec at Manicouagan and Conture Lake and one in northern Saskatchewan at Carswell Lake.

Plans for 1964

Continuation of magnetic observatories at locations mentioned above with research programs in geomagnetic variations along the line from Mould Bay to Resolute Bay anticipated, and research in magneto-tellurics at Mould Bay. A major regional survey, employing two helicopters and a fixed wing aircraft will map the gravity field of a 250,000 square mile area in eastern Quebec and Newfoundland during the period June to September. Detailed studies over several intrusive bodies in the area will be carried out as well as further investigations in the northern Labrador trough, the Cape Smith-Wakeham Bay belt, and an area north of the Payne River on Ungava Bay. Further gravity control will be established in conjunction with the regional survey of eastern Canada. Additional connections will be made in the Northwest Territories including ties to the DEW Line sites and arctic control station networks. During the summer months, underwater gravity traverses of a reconnaissance nature will be established in the Hudson Strait and Hudson Bay to provide further information on the sedimentary basin of Hudson Bay and to trace the extensions under the Bay of some known geological structures in Quebec, Ontario, and Manitoba. Regional gravity coverage over a 20,000 square mile area of the continental shelf west of Brock Island will be completed with additional measurements made over the Byam Martin Channel, Hazen Strait, Ballantyne Strait, and Hecla and Griper Bay. Two detailed gravity traverses will be made over the Continental Shelf and extending well out into the Arctic Ocean. Seismic vaults will be completed at three of Whitehorse, Baker Lake, Churchill, and Great Whale River.

GEOGRAPHICAL BRANCH

Responsibilities

Obtaining data, through field investigation and compilation, on physical, economic, and social (including urban) geography. Preparing suitable maps and explanatory reports, describing and interpreting these geographical phenomena. Assisting in other phases of planning and development through the provision of fundamental geographical data, including the investigation of questions of geographical nomenclature in the North.

Long-term Plans

To complete preliminary reconnaissance terrain mapping by areas according to the National Topographic system, bearing in mind the constant need for more detailed investigations in areas of economic importance. Prerequisites of this objective include the solution of problems associated with cartographic portrayal of surface conditions and the build-up of skills in detailed air photo interpretation. These problems are being tackled by conducting detailed, long-term field investigations in specific areas, such as Ellef Ringnes, Meighen and Baffin Islands and the Mackenzie River Basin. Experimentation in precise geomorphological mapping is underway, and the detailed study of problems in physical geography, concentrating on glaciology, hydrology, and landscape evolution, is being undertaken, both as a justified objective in itself, and as a means towards future extrapolation to cover large areas on a reconnaissance basis.

To complete the mapping and interpretation of data on the distribution of ice in Canadian waters; to conduct a full appraisal of break-up and freeze-up conditions in Canadian rivers and lakes; to complete a study of the distribution and regime of glaciers and ice caps.

To complete a study of northern settlements and site factors and additional aspects of the economic and human geography of the North.

Review of 1963 Operations

Field studies were continued in the Mackenzie Delta, with emphasis being placed on hydrological conditions, ground ice sheets and the geomorphic aspects of river erosion. A historical geographic study was made of Alexander Mackenzie's voyage of discovery down the Mackenzie River.

Studies in geomorphology, glaciology, hydrology, and botany were extended on Baffin Island with concentration on and around the margin of the Barnes Ice Cap. Additional studies were undertaken in the Bruce Mountains and

reconnaissance surveys made by aircraft in the zone between McBeth Fiord and Coutts Inlet, fronting Baffin Bay. Geomorphic mapping and studies of postglacial marine submergence were undertaken between Tay Sound, Milne Inlet and the Pilik River. This area is of economic significance owing to the discovery of very high grade iron ore deposits by Baffinland Iron Mines Ltd.

An airborne survey of sea ice conditions, initiated in 1961, was continued in the Queen Elizabeth Islands. This work was part of the Geographical Branch's contribution to the Polar Continental Shelf Project, and was carried out from bases at Isachsen and Resolute.

Data were compiled on 15 settlements in the Northwest Territories, Yukon, and northern Quebec from field work carried out in previous years.

Investigations were completed for 293 new place names and 95 contentious names in conjunction with 79 new maps and 71 general submissions. Some 980 previously approved names were reviewed for orthography and application.

Plans for 1964

Twenty geographers and assistants will further extend the field program in north-central Baffin Island. Glaciological studies on the Barnes Ice Cap will begin in May and will be extended to the mountains of the east coast in June. Geomorphological and hydrological work will begin in June, both at the northern end of the Barnes Ice Cap and between Generator Lake and Clyde and Ekalugad fiords. Botanical studies, through co-operation with Queen's University Biology Department, will be undertaken in support of the geomorphological studies.

Five geographers will undertake detailed geomorphological and hydrological studies in the Mackenzie Delta. Airborne studies of freeze-up and break-up of the Mackenzie River will also be made. The airborne sea ice survey of the Polar Continental Shelf Project area will continue.

The field study of settlements in the north will continue, as will the investigation and processing of geographical names, as and when the need arises.

During the year a series of major reports on other work in Baffin Island, Mackenzie Delta and Ellef Ringnes Island will be completed.

GEOLOGICAL SURVEY OF CANADA

Responsibilities To describe and interpret by means of appropriate maps and reports, the geology of bedrock and unconsolidated deposits, including those under the continental seas; to investigate and assess mineral resources and the geological factors affecting their formation, discovery, and development; to provide fundamental geological data for engineering and water supply projects and other factors affecting land use; to make contributions to the science of geology.

Long-term Plans

Highest priority during the past decade has been given to the preliminary reconnaissance study and mapping of the Yukon Territory and Northwest Territories. Some 75 per cent of the north has now been covered on reconnaissance scales (1 inch to 8 miles, and 4 miles) and the effort devoted to this work will now decline gradually until its completion some ten years hence. This reconnaissance has gone far towards meeting the immediate demands of the mining and petroleum industries for general information on remote areas, and permits preliminary estimates of mineral potentials.

The effort devoted to the detailed study of critical areas and problems disclosed by the reconnaissance work, and to investigations of mineral areas, is expected to increase sharply during the next few years, particularly in the Yukon Territory and the District of Mackenzie.

Aeromagnetic Surveys made by or for the Geological Survey are primarily a supplementary method of obtaining reconnaissance geological data. As a result of an \$18 million co-operative program of aeromagnetic surveying started in 1961, it is expected that an aeromagnetic survey of the Canadian Shield in the Northwest Territories, and currently amenable parts of the Yukon, will be completed within about a decade. The surveys are being made by contracts with commercial survey companies. It is hoped that experimental surveys now under way in British Columbia will develop practicable and reasonably economic ways of making aeromagnetic surveys of mountainous terrain and thus make additional areas of Yukon and perhaps of the eastern and northeastern Shield amenable to these surveys.

The 8-mile geological reconnaissance of the District of Franklin north and west of Baffin Island was almost completed by the end of the 1963 field season.

A helicopter-supported reconnaissance of the northwest part of Baffin Island was completed and three other such projects will follow, commencing at the south end of the island, with the object of completing the initial survey of the island, and of the District of Franklin, within the decade or shortly thereafter. Also started in 1963 was the follow-up to the initial 8-mile reconnaissance, the 2-mile mapping and study of the Bathurst and adjacent islands; and this work will be extended in subsequent years by similar investigations of other critical areas and by stratigraphic-palaeontological studies required to solve specific problems. Aeromagnetic surveys, and studies of the marine geology of the northwestern continental shelf and adjacent channels, will keep pace with the Polar Continental Shelf Project as the centre of that effort moves southwesterly from Isachsen. It is unlikely that the general level of Geological Survey activity in the Arctic Islands, except Baffin Island, will increase significantly in the next few years.

Review of 1963 Operations

Twenty parties spent the entire field season in Yukon Territory or Northwest Territories, and seven others spent part of the season. The results of this work have been outlined in Geological Survey of Canada Paper 64-1, released 13 January 1964.

The principal project in District of Franklin resulted in the reconnaissance mapping of the bedrock and surficial deposits of the 55,000 square miles of Baffin Island lying west of the 80th meridian. One party continued reconnaissance mapping and stratigraphic studies of western Ellesmere Island and northern Axel Heiberg Island; and another made stratigraphic studies near Tanquary Fiord preparatory to completing the geological reconnaissance of northern Ellesmere Island within the next few years. A party working on Bathurst Island completed the first of two seasons required to study the stratigraphy and structure of the bedrock in detail appropriate to publication at 1 inch to 2 miles, and made a reconnaissance study of the surficial geology of the eastern part of the island. A National Research Council post-doctoral fellow, supported in the field by the Geological Survey of Canada and the Polar Continental Shelf Project, investigated gypsum-anhydrite bodies on Axel Heiberg and Ellesmere Islands with the object of obtaining information on the mechanics of their emplacement. Another officer made a brief study of the gypsum and anhydrite deposits of the Arctic Islands as the final phase of a survey of the principal occurrences of these minerals in Canada.

Three parties studied the marine geology of the continental shelf and adjacent channels while attached to the Polar Continental Shelf Project. This involved

investigations of the shelf deposits beyond the northwestern tips of Borden and Prince Patrick Islands, and of sediments in Prince Gustaf Adolf Sea and near Mackenzie King Island. Additional marine geological work was done from CCGS "Labrador" in Baffin Bay, Hall Basin, and Jones Sound.

In southeast District of Keewatin one party continued a re-study, for publication at 1 inch to 4 miles, of a complex and critical area outlined by Operation Keewatin in 1952. Another made a re-examination of the sedimentary and volcanic rocks of the Dubawnt group in the central part of the District as outlined by Operation Baker in 1954. Both these 1963 investigations resulted in significant additions to the geological information provided by the previous reconnaissance projects.

A seismic refraction survey was made southeast of Churchill from the coastal ice of Hudson Bay in District of Keewatin, and inland from York Factory in Manitoba. The results will provide information on the thickness and structure of strata overlying the Precambrian basement rocks.

A major project in District of Mackenzie involved some 10,000 feet of diamond drilling in the Muskox Intrusion, Coppermine River, as a part of the International Upper Mantle Project. Three holes, the deepest to a depth of 4,000 feet, provided a complete section through the layered intrusion, from roof to footwall. Studies of the cores will provide information on the original composition of the magma, believed to have been derived from the mantle, and should tell much concerning the processes involved in the emplacement and layering of the intrusion. Other phases of the project included resistivity, self-potential, gamma, and neutron logs of the holes, determinations of seismic velocities within the various layers, and sampling for determination of relative ages by palaeomagnetic methods.

Other projects in District of Mackenzie included the completion of 4-mile mapping of a critical area revealed by Operation Thelon in 1955; the completion of 1-mile mapping in two areas in the Yellowknife district, one containing lead-zinc deposits; and further collection of Upper Devonian carbonate rocks near Hay River for a stratigraphic-petrologic Ph.D. thesis project.

An Aeromagnetic survey by contract, involving some 60,000 line-miles of flying, was made of an area between Fort Reliance and the north end of Contwoyto Lake.

In southwestern District of Mackenzie and southeastern Yukon, Operation Nahanni resulted in the geological mapping of about 12,500 square miles for publication at a scale of 1 inch to 4 miles; and an officer attached to this party

completed a study, for a Ph.D. thesis, of the stratigraphy, structure, and other factors bearing on the localization of metallic minerals at the nearby Canada Thungsten mine.

In Yukon Territory, one party made biostratigraphic studies of Carboniferous and Permian rocks in the northern Ogilvie Mountains and, with the co-operation of United States Geological Survey personnel, in adjacent parts of Alaska; and another continued engineering geology investigations, on behalf of the Department of Northern Affairs and National Resources, of potential damsites.

Plans for 1964

Some 22 field parties, in addition to aeromagnetic surveys, are planned for the Yukon and Northwest Territories. Nine parties will be in District of Franklin, five in District of Keewatin, three in District of Mackenzie, and five in Yukon.

In District of Franklin a preliminary reconnaissance will be made of the bedrock and surficial geology of Baffin Island south of the Arctic Circle preparatory to Operation Amadjuak whereby it is expected to map this area in 1965 at 8-mile scale. Other parties will continue and complete the 2-mile study of the stratigraphy and structure of Bathurst Island, and investigate Triassic biostratigraphy and Permo-Carboniferous stratigraphy.

With support from the Polar Continental Shelf Project a party will make a detailed investigation of "tar sands" of northwest Melville Island; another will be concerned with the surficial geology of Prince Patrick, Brock, Borden, and Mackenzie King Islands; and three will study the marine geology of the continental shelf and adjacent channels.

A decca-controlled aeromagnetic survey of parts of Borden, Mackenzie King, Prince Patrick, and Melville Islands and the adjacent continental shelf and inter-island waterways will be carried out by contract.

A major project in District of Keewatin will be Operation Wager, in the vicinity of Wager Bay, expected to complete the 8-mile reconnaissance of the bedrock and surficial geology of the mainland Canadian Shield in Northwest Territories. In the southern part of the District, another party will complete 4-mile mapping of a critical area disclosed by Operation Keewatin in 1952.

In Hudson Bay, aboard CGS "Hudson" and in co-operation with the Bedford Institute of Oceanography, other officers will make seismic and magnetic surveys and study marine geology.

An aeromagnetic survey of some 60,000 line-miles of southern District of Keewatin will be made by contract with a commercial operator as the third phase of a three-year flying contract started in 1962. The two previous areas flown under this contract were north of Great Slave Lake in District of Mackenzie.

In District of Mackenzie, two parties will map for publication at 1 inch to 4 miles. One of these will work in the Contwoyto Lake District to provide regional information concerning the host rocks of promising gold deposits, and the other will be on the upper Coppermine River to solve critical geological problems arising from a recent reconnaissance survey. A third party will make a more detailed investigation of the area immediately surrounding the Contwoyto Lake gold deposits of Canadian Nickel and other companies.

A concerted effort will be made to encourage and aid prospecting and exploration in southwestern Yukon Territory.

A contract aeromagnetic survey of some 45,000 line-miles will be made between Whitehorse, Dawson, and Mayo; an extensive reconnaissance geo-chemical survey, supported by helicopter, will seek to find and outline areas most likely to contain ore deposits in the Keno Hill district; two parties will do 1-mile mapping expected to contribute towards a better understanding of the structure, stratigraphy, and other features bearing on mineral exploration in and near the Keno Hill-Galena Hill silver mining camp; one officer will study surficial geology with special reference to placer gold deposits of the Klondike district, and to prospecting techniques being used on Keno and Galena Hills. Investigations of the engineering geology of damsites, as required by the Department of Northern Affairs and National Resources, will continue.

MINES BRANCH

Responsibilities Technical assistance for the development of mining and metallurgical industries in the North and for the development and utilization of petroleum and natural gas resources. Consulting advice and investigations on metals, metallic and non-metallic minerals, fuels, petroleum, natural gas, and industrial waters as related to northern development.

Long-term Plans

To continue technical assistance in developing mineral, petroleum, and natural gas resources in co-operation with industry, the Department of Northern Affairs and National Resources, and other branches of Government.

Review of 1963 Operations

Metallic Ores

At the request of the RCMP, Department of Justice, and in co-operation with the Geological Survey of Canada and the Department of Northern Affairs and National Resources, an extensive investigation was undertaken. This investigation was necessary in connection with the alleged theft of 75 tons of high grade silver-lead ore and related mill products, that had been shipped to a smelter in Montana, U.S.A. Extensive mineralogical examinations, fire assays and chemical and X-ray analyses were made involving samples from the shipment and from several locations in the Keno Hill area. Five officers of the division were engaged in the work and three of them were subpoenaed to appear at a preliminary hearing at Mayo, Y.T., November 19 - December 3. The trial is expected to take place in the late spring or early summer of 1964, at which time the several officers of the division assigned to the project are expected to be called as expert witnesses.

Several investigations were carried out on samples from a silver-base metal deposit at Cross Fault Lake, N.W.T., with a view to developing an economic method of treatment. The samples were high in silver, but to be economic the shipping grade of concentrates must be high and the cost of treatment low.

Throughout the year small scale investigations were carried out on samples from the low-grade iron deposit of Crest Exploration Limited from the Snake

River area in Yukon. These investigations were followed by gravity concentration with the Wemco jig as the most promising process, and a pilot plant was operated on a 58-ton sample. The overall feasibility of iron production from the Yukon can now be estimated if markets can be developed. Crest officials were also assisted in co-ordinating the many specific research projects being carried out at other laboratories in Canada and U.S.A.

As part of the Mines Branch process development program on Crest ore, small batch tests were conducted on the roasting of the iron oxide concentrates to render them magnetic. This was followed by magnetic concentration studies on the roasted product. Although the project is incomplete, further elimination of impurities such as phosphorous will have to be achieved before the test program can be called successful.

Depressed tungsten mineral markets forced a suspension of mining operations in July, 1963, of the Canada Tungsten Mines Ltd., located in the Flat River area, MacKenzie mining division, N.W.T. As a measure to meet this situation, laboratory scale process studies have been undertaken with the object of developing economic methods of producing high purity tungsten products from this Canadian ore, to assist the company to develop markets other than those of tungsten mineral concentrates.

The mill superintendents of the gold mills using the cyanide process, which includes three mills in the Northwest Territories, were invited to take part in an industry-wide technical meeting held at the Mines Branch in January, 1963, to discuss research and operation aspects of cyanide leach plant metallurgy.

Non-Metallic Minerals

Samples of industrial minerals originating in the North were examined during the year. A local clay from Sugluk was investigated at the request of the Department of Northern Affairs and National Resources as a potential material for art pottery.

Fuels

Sixteen samples of coal from Intrepid Bay, N.W.T., and one sample of crude oil from Chance, Y.T., were examined. In addition, samples of bituminous sand from Melville Island, N.W.T., were analysed.

Industrial Waters

A five-year program of sampling and analysis of the Mackenzie and Yukon River was continued into the fourth year. Because of the staff commitments

there was a decrease in the number of sampling stations. Samples of surface and ground-waters were analysed for the Geological Survey of Canada. Technical assistance was given to the Department of National Defence and other departments on problems in water treatment. Several samples of water from Ellesmere Island were analysed to assist the Department of Agriculture in a research study on the ecology of aquatic organisms. A report is being prepared on the chemical quality of waters (apart from drainage basins) in the Arctic Islands and the Northwest Territories.

Mineralogical Studies

During the summer of 1963 one officer of the division in co-operation with the Geological Survey of Canada made an examination of the new iron ore deposits located near Mary River and of the base metal deposit on Strathcona Sound near Arctic Bay. Samples were collected from detailed mineralogical study in the laboratory.

A base metal ore sample from N.W.T. was examined; iron ore from the Snake River deposit of Crest Exploration Ltd., on the Y. T. - N.W.T. boundary was examined for its apatite content.

Chemical Analyses

Chemical analyses and fire assays were done on 103 samples submitted by the Geological Survey of Canada from the territories. This involved 390 determinations of precious and base metal elements. Eight reports of analyses were issued covering this work.

The Use of Alloys at Low Temperatures

Investigations were continued on welding of constructional steels at temperatures in the range 70°F to -60°F. From a metallurgical point of view there seems no reason to prohibit welding at low temperatures provided that proper precautions are taken. These precautions consist in using low-hydrogen electrodes and increasing the heat input in a controlled manner. A report on this welding work is in draft.

The results of metallurgical examination of steel icebreaker propeller blades were reported, together with recommendations pertaining to steel composition and inspection techniques. A tentative specification was written to facilitate purchase and inspection of blades. Data were also supplied concerning materials used and service obtained by other agencies operating icebreakers.

Various researches were carried out in the general field of brittle failure. Studies were conducted to determine the transition temperature of European

steel sheet piling, the objective being to assess the response of the piling material for cold weather conditions. This work was conducted at the request of the National Harbours Board, which was constructing a new sheet pile cellular wharf in very cold weather conditions. An investigation was carried out into the brittle failure of an ex-military steel bridge installed for civil use in the Yukon Territories, and it was found to have started from welding cracks.

At the request of the Geographical Branch, metallurgical examination of corroded tin plate specimens from an Arctic 'campsite was done to assist in establishing the age of the discovery in relation to the history of Meighen Island.

Experiments were carried out to determine an optimum carburizing heat treatment for use with a high-strength, mining, hollow drill steel.

Plans for 1964

Technical and scientific services will be provided for assisting in the opening of new mines, for increasing mineral production in the Territories, and for solving production problems of petroleum and natural gas. Scientific advice will be available and investigations will be undertaken as required on northern problems related to metals, minerals, fuels, petroleum, natural gas, and industrial waters. Specific projects include the continuation of the long range sampling program on the quality of waters in northern rivers, investigations to improve the marketability of Crest iron ore concentrate, and provision of expert witnesses regarding the alleged theft from the Keno Hill area.

POLAR CONTINENTAL SHELF PROJECT

Responsibilities To carry out a long-term investigation of the continental shelf lying to the north and west of the Canadian Arctic Archipelago and of the waters above it, together with the islands of the archipelago where relevant, and the straits and sounds between the islands. The investigation is to comprise mainly those fields of survey and subjects of research for which the Department of Mines and Technical Surveys is responsible in other parts of Canada, wherever such study is not more economically and efficiently pursued as a separate self-contained operation; but it is also designed to include or to support worthwhile researches in fields outside those normally supported by the Department, if such researches could not otherwise be carried out.

Long-term Plans

The field survey and research phases of the Project will eventually cover all the Canadian sector of the Arctic continental shelf of North America and all parts of the Arctic Archipelago not investigated by other agencies in a particular field. From 1959 to 1963 work has been concentrated in the region between Meighen Island and Brock Island, extending about 200 kilometres out to sea and the same distance back into the archipelago; but individual programmes of survey and research have been carried out throughout all the Queen Elizabeth Islands, and extended to Banks Island in the southwest and northern Greenland in the northeast. As the area of intensive systematic survey moves to the southwest along the Arctic Ocean front, at a rate of about 150 kilometres per year, it is expected that a greater portion of the specialized researches will be carried out at widely separate places throughout the region, in whatever locality the problem is best studied. The Project therefore will expect to maintain a central base of operations in the field, scattered sub-bases as necessary, and an extensive logistics and communications system, ranging throughout the Archipelago and adjacent ocean, to support widely scattered activities.

Review of 1963 Operations

Field work was co-ordinated mainly from Isachsen, on Ellef Ringnes Island. A party totalling 79 persons was engaged in investigating the central section of the arctic continental shelf and adjacent islands and straits. A further 22 persons were engaged in supporting roles connected with the transport of supplies, and 13 engaged on camp construction.

The following is a summary of the work done in the major scientific fields:

Hydrography

As a continuation of the development of techniques of charting ice-encumbered waters, a standard hydrographic survey was made for the first time by purely airborne methods. Hell Gate, between Ellesmere and North Kent Islands (Lat. 77°N. Long. 90°W.) was surveyed on a scale of 1:50,000. About 800 km. of continuous profile sounding lines were run, spaced at approximately 500 metre intervals throughout the channel, by towing echo sounding equipment behind helicopters, whose position was determined by a Decca Hi-Fix electronic survey system. In addition, horizontal and vertical control was established for photographic mapping of the coastline and topography; observations were made of the vertical and horizontal tidal movement; all beaches which might be used for a landing from the sea were described; and notes taken for sailing directions.

Further tests were carried out with a "single-body" towed echo sounder which, when fully developed, will overcome some of the weather and sea state limitations of the present "two-body" system.

Submarine Geology

The programme in submarine geology has been designed to provide information on the character and stratigraphy of the sediments on the floor of the seas surrounding the islands of the Archipelago, and covering the continental shelf. Three main studies were undertaken. (1) A series of cores and grab samples of the ocean floor were taken from the continental shelf from northwest of Borden Island to northwest of Prince Patrick Island. These are being studied to determine the conditions of sedimentation and bottom transport on the shelf, and the relation of the sediments to the present coast line and to the presently exposed geological formations. (2) A planned series of traverses across western Prince Gustaf Adolf Sea to collect bottom samples as part of a study of the processes of sediment erosion, transport, and deposition, and diagenesis in an Arctic marine environment was severely hindered because of logistic and equipment difficulties. The work will be completed in a future season. (3) Palaeoecological and palaeontological studies of the inshore sediments were made in the large bay on the east side of Mackenzie King Island, with a view to dating the materials by their fossil content and investigating the past and recent biological environment.

Terrestrial Geology

The mechanics of intrusion of the distinctive gypsum-anhydrite diapirs of the Sverdrup basin were studied by two geological parties. One group made detailed petrofabric observations of the diapirs near South Fiord and near Mokka Fiord on Axel Heiberg Island. The other party studied the general geology of the Isachsen Dome and South Fiord bodies.

Gravity

The regional gravity survey was continued. An area on west-central Ellesmere Island and northeast Axel Heiberg Island, in the vicinity of Nansen and Greely Fiord and Eureka Sound was completed. The previous coverage in the Parry Islands was extended by surveys on eastern Melville Island, and in the area north of Byam Martin Channel towards Mackenzie King Island.

Detailed gravity studies were carried out on the gypsum diapir on Sabine peninsula on Melville Island, and on the large diapir near South Fiord on western Axel Heiberg Island, in combination with the geological studies (q. v.)

A gravity survey was made of the ice caps on western Melville Island, in conjunction with the glaciological work (q. v.)

Seismic Surveys

The geological formations and the crust of the earth beneath the Queen Elizabeth Islands were investigated by seismic refraction methods. A traverse across the Innuitian folded belt and the Sverdrup basin, begun in 1962, was completed in 1963. This work has given a cross section of the Earth's crust from the south end of Wellington Channel, east of Resolute, to the northwest end of Ellef Ringnes Island, northwest of Isachsen, a distance of some 650 kilometres. A combination of widely spaced very low frequency recording geophones and a standard exploration seismograph at shorter distances has yielded information of both the shallower structures and formations and the deeper parts of the crust and upper mantle. The method of operation, using tracked trucks travelling on the sea ice, setting off explosions, near the ocean bottom, proved well adapted to a sustained traverse in Arctic conditions.

Geomagnetism

An investigation was made of a region of anomalous magnetic variations in the region of Prince Patrick and western Melville Island. The magnetograms of the magnetic observatory at Mould Bay show a remarkable absence of short-term fluctuations in the vertical component of the magnetic field, while the horizontal components behave normally. The possible causes of this anomaly have been investigated theoretically, and the observations are consistent with the presence of an anomalous conducting layer within or near the bottom of the crust. Such an anomalous conductor could be the result of rock at high temperature at relatively shallow depth; this, to be consistent with the gravity data, will require a local crustal thinning and rise of mantle material. The field studies under-taken in 1963 were designed to test this hypothesis and explore the areal extent of the anomaly. Magnetic stations were set up in northwest Prince Patrick Island and northwest Melville Island.

The observations to date are consistent with the tentative explanation; the anomaly is at least as great in magnitude as first suspected, and underlies an area of at least 30,000 square kilometres.

Glaciology

A detail network of stakes and snow pits, with the attendant control surveys was set out on the icecaps of western Melville Island, as a part of a long-term study of the thermal behaviour and climatological response of these ice masses. This work was supplemented by gravity surveys (q.v.)

The glaciological station on Meighen Island was occupied for the fifth season. Measurements were made of accumulation and ablation, and of material transfer in this nearly stagnant ice-cap.

Preparations were made for an extended programme of thermal investigation of the ice cap. A thermal coring drill is being constructed, with which it is hoped to penetrate right through the ice cap. The field work is scheduled to begin on Meighen Island in 1964.

A planned photographic survey of the active parts of most of the major glaciers in the Queen Elizabeth Islands, to be undertaken in conjunction with the International Hydrological Decade, was frustrated by the lack of a single day suitable for flying or photography during the height of the ablation season.

Sea Ice Studies

Systematic patrols were made of all major waters of the Queen Elizabeth Islands and of the adjacent Arctic Ocean, and Parry Channel, throughout the season of significant sea ice activity. Information was recorded on the nature, break-up, amount, distribution, dispersal, and formation of the ice, and this was supplemented by a photographic record where required. It has been possible to follow the movement of the same ice throughout the season and from year to year. The continuation of these surveys for a number of years is beginning to show the wide and very significant variations in sea ice nature and movement from year to year, both in gross picture and in detail. A distinct and seemingly almost independent variation in behaviour of the sea ice in the eastern and western parts of the archipelago is emerging. It is already possible to forecast, nine months in advance, the probable ice conditions in the Arctic shipping routes with much more certainty than in the past; but much more remains to be learned before the causes and controls of sea ice behaviour are understood.

Topographic Control Surveys

A control traverse was run across the sea ice, out to sea from Borden Island, to calibrate the accuracy and stability of the Decca Lambda survey

system over all-water paths. This was an unique and valuable contribution, giving information on the precision of electronic survey systems at sea that is not readily obtainable in temperate waters.

Surveys were run to tie the next Decca Lambda transmitter site, near Houghton Head on western Prince Patrick Island, to the regional geodetic and topographic network and to provide information for the calibration of the Cape Andreason Decca Lambda chain. The ground control was extended in the Cardigan Strait and western Jones Sound areas in preparation for hydrographic surveys proposed for 1964. Detailed surveys were made of the glaciological stake network on the Melville Island ice caps. A tellurometer traverse was run from northwest Devon Island to Isachsen, to give the positions of the stations along the seismic profile (q.v.) across the Sverdrup Basin.

Plans for 1964

Work will be continued in the major activities engaged in in 1963, with certain additional surveys and studies.

Hydrographic surveys are planned for:

- (a) the waters over the continental shelf offshore from Brock and northern Prince Patrick Islands, on a scale of 1:500,000
- (b) the waters within the archipelago between Prince Patrick, Melville, and Mackenzie King Island, on a scale of 1:500,000
- (c) Cardigan Strait and Jones Sound, on a scale of 1:500,000

The development of the continuously recording helicopter-towed echo sounder will be continued.

Submarine geological parties will undertake:

- (a) bottom sampling and sounding on the Arctic continental shelf between northern Borden Island and southern Prince Patrick Island, generally farther offshore than the areas sampled in 1963;
- (b) detailed sampling of the sediments in Satellite Bay, northern Prince Patrick Island

Terrestrial geological investigations to which the Project expects to contribute support include:

- (a) a study by the Geological Survey of Canada of the Pleistocene and surficial geology on Prince Patrick Island;
- (b) a structural and stratigraphic study by the Geological Survey of Canada in northern Melville Island;
- (c) a study by a university group of Pre-cambrian formations on northwestern Victoria Island.

Gravity work planned for the 1964 season includes:

- (a) Traverses out to sea, across the outer edge of the continental shelf and across the continental slope, in the region off-shore from the north end of Prince Patrick Island;
- (b) Regional gravity surveys of the continental shelf northwest of Prince Patrick Island and of the waters of the archipelago between Mackenzie King and Melville Islands;
- (c) Regional gravity surveys of southern Byam Martin Channel, if possible;
- (d) Further studies on Ellesmere Island, and in the Lincoln Sea - Robeson Channel area.

The seismic investigations proposed include:

- (a) a traverse across the continental slope and continental shelf to the oceanic basin northwest of Prince Patrick Island;
- (b) a profile within the northwest rim of the Sverdrup Basin, from the west end of M'Clure Strait to Isachsen, inside the outer rank of islands;
- (c) a traverse across the west central part of the Sverdrup Basin, from Brock Island south toward Winter Harbour on Melville Island.

Geomagnetic studies for 1964 are designed to investigate further the anomaly in vertical magnetic variations in the Mould Bay region. A series of magnetic stations will be set up on a line between Mould Bay and Resolute to determine the size of the anomaly and the nature of its boundary.

An aeromagnetic survey is planned to cover an area of approximately 50,000 square kilometres in the region of northwest Melville Island, Brock Island and Ballantyne Strait and out to sea across the continental shelf. About 50,000 line kilometres are to be flown, for magnetic mapping on a scale of 1:126,720.

The glaciological programme is planned to comprise:

- (a) Re-measurement and survey of the glacier stake network on Melville Island;
- (b) Study of some of the peculiar phenomena of the Melville Island glaciers, particularly at the margins and relatively active ravine-bottom ice masses;
- (c) Coring and subsequent thermal study of the Melville Island ice cap;
- (d) Photographic inventory of the present state of the major glaciers of the Queen Elizabeth Islands;
- (e) Flowage and stress studies on a large ice island, if available.

A programme of geothermal heat flow measurements is in preparation. The initial work will be in two aspects; one will comprise part of the study of the thermal relations of the Meighen Island ice cap, and the other will be directed toward measuring the loss of heat from the ocean floor in the region of the Mould Bay geomagnetic anomaly.

The sea ice patrols will be carried out essentially unchanged, with the addition of greater coverage of the Arctic Ocean, and of more frequent observation in the autumn.

Topographical surveys will be carried out as appropriate to provide basic position control for the respective studies. One special survey task that will be undertaken if circumstances permit is to run a preliminary survey in the Robeson Channel - Kennedy Channel area, preparatory to a later precise survey to be undertaken in connection with a studies of crustal and continental stability.

Marine biological studies are planned over the continental shelf offshore from Prince Patrick Island, to study the benthic and pelagic fishes.

A botanical survey will be undertaken in south-central Melville Island.

It is proposed that a study will be made of the insect life of the Parry Islands (probably Melville Island).

The field work is expected to employ about 85 men. The main centre of operations will be at Mould Bay, with a subsidiary centre at Hell Gate. Other semi-permanent or temporary facilities will be established where required throughout the area, including an ocean camp northwest from northern Prince Patrick Island.

SURVEYS AND MAPPING BRANCH

Responsibilities To carry out all geodetic, topographic, and legal surveys, and to produce topographical maps and aeronautical charts required for administration, development, and defence purposes.

Long-term Plans

Geodetic Control

To extend horizontal and vertical control as developments warrant and facilities permit and to obtain data from astronomic observations for investigations of the size and shape of the earth.

Mapping

To complete topographical coverage at 1:250,000 by 1967; to provide 1:50,000 and, if necessary, larger scale mapping of major routes of travel and other areas of economic importance or development; to revise air chart bases as better information becomes available.

Aeronautical Charting

To revise the portrayal of aids to air navigation on aeronautical charts and pilots handbooks and other air information publications, and to produce new aeronautical charts as required.

Legal Surveys

To manage and execute surveys made to enable land or resource transactions involved in the administration and development of public or other lands.

Review of 1963 Operations

Geodetic Control

The arc of triangulation which reached Yellowknife from the southeast in 1962 was extended to Lac la Martre and then north to a point about 40 miles north of Coppermine. The east-west arc which reached Tulemalu Lake in 1962 was extended to Baker Lake and Rankin Inlet, and a connection was made to Chesterfield Inlet. Astronomic control was established in the Yellowknife-Coppermine arc near Faber Lake, east of Port Radium and at Coppermine. In the Baker Lake-Rankin Inlet arc, astronomic control was established south of Baker Lake and at Rankin Inlet.

Topographic Mapping

1. Field Work

- (a) Establishment of control for 1:50,000 mapping of 35,000 square miles in the Liard, Nahanni, Redstone and Keele River basins west of the Mackenzie River.
- (b) Surveys for location of islands and shoals in James Bay and in portions of Hudson Bay for mapping and charting.
- (c) Establishment of control in Whitehorse for municipal development and for mapping at scale of 1" to 100'.
- (d) Surveys for large-scale plots of settlements at Mayo and Keno, Y. T.
- (e) Four hundred miles of traversing in the Arctic Islands to supply control for work of the Polar Continental Shelf Project.

2. Map Compilation

- (a) Three map sheets were completed in Baffin Island and four on the mainland for publication at a scale of 1:250,000.
- (b) Mapping completed for publication at a scale of 1:50,000 included two sheets in the Klondike district, three in the Great Slave Lake Region, and thirty completing coverage of Ellef Ringnes Island at this scale.
- (c) A special plot was made of the Porcupine River Basin, Y. T. for the Water Resources Branch, Department of Northern Affairs and National Resources.
- (d) Special plots were made of Penny Strait, Belcher Channel, Cape Dorset Airstrip, and northern settlements at Holman Island, Rat River, Fort Smith, Hay River and Inuvik. Material was prepared for plotting twenty-six other settlements by contract.

Aeronautical Charting

Aeronautical information was revised for existing aeronautical charts and publications as required for civil and military use. Topographical information was revised on three 1:500,000 charts, one 1:1,000,000 chart and one plotting chart. "Northern Aerodromes" (a supplement to the Canada Air Pilot) was issued for civil aviation and revised as required.

Legal Surveys

Yukon Territory - In the City of Whitehorse 47 additional lots were added to the Transient Area Subdivision and a survey was made of the extension of Lewis Blvd. The subdivision of the Whitehorse Airport reserve was completed with the survey of 7 more lots and an access road. An additional 76 lots were laid out and surveyed in the Watson Lake Subdivision. Seventeen block corners were restored in the City of Dawson and tied to a co-ordinate control system which was also established in the Dawson area during the year. Fifty-seven miscellaneous lots at various locations were surveyed, for sale to specific individuals or corporations, for future sale, or for the use of various departments or agencies of the Government.

Northwest Territories - All surveys undertaken in the Northwest Territories were made in the District of Mackenzie. Additions to existing subdivisions were made at Fort McPherson (33 lots), Fort Franklin (80 lots), Enterprise (49 lots), Inuvik (31 lots), and Tuktoyaktuk (9 lots). One new subdivision of 17 lots was laid out and surveyed at Kakisa Lake. Thirty-nine miscellaneous lots were surveyed at various locations. Additional survey work was done in order to connect the legal surveys to the topographic site plan surveys at Tuktoyaktuk, Fort McPherson, Arctic Red River, Fort Good Hope, Fort Norman, Fort Franklin and Coppermine.

Surveys were made at two localities by private survey firms under contract. At Norman Wells a subdivision of 18 lots was laid out. In addition, surveys were made for a transmitter site, a right-of-way for a road and transmission line, and an extension to the approach lighting system at the airport. At Pine Point a single lot was surveyed.

Plans for 1964

Geodetic Control

One triangulation party will continue the arc from Coppermine along the south coast of Victoria Island to Cambridge Bay. Astronomic control will be established along this arc.

Topographical Mapping

1. Field Work

- (a) Extension of control for mapping and charting of islands and shoals in Hudson Bay.
- (b) Completion of control for mapping vicinity of Whitehorse at scale of 1:25,000.

- (c) Local surveys for large scale plots of settlements in southern Yukon and around Great Slave Lake.
- (d) Assistance to the Polar Continental Shelf Project.

2. Map Compilation

- (a) Possibly twenty sheets at the 1:25,000 scale on Baffin Island.
- (b) About forty sheets at the 1:50,000 scale including sixteen in the Beaver River Basin, Y. T., thirteen in the Barnes Ice-cap area on Baffin Island, seven around Hell Gate at the southwestern end of Ellesmere Island and four of Meighen Island.
- (c) Preparation of material for plots or revisions by contract of about 24 settlements.

Aeronautical Charting

Aeronautical information in existing aeronautical charts and publications will be revised as required. Topographical information will be revised as new large-scale mapping becomes available. The "Canadian Aeronautical Planning Chart" and the series of "Enroute High Altitude Charts" will be re-done and extended to cover all northern Canada.

Legal Surveys

Yukon Territory - The largest item in the programme will be the survey of the Right-of-Way of the Canol Pipe Line between Carcross and Whitehorse.

One new subdivision of 25 lots is planned for Beaver Creek. The remainder of the program consists of the survey of 43 miscellaneous parcels along the Alaska Highway and Haines cut off road for sale or lease or for the use of the various agencies of the Government.

Northwest Territories

Four subdivisions are planned for Fort Smith, Fort Simpson, Fort Providence, and Hay River. One road survey is planned for Fort Smith. Twenty-four miscellaneous parcels of land are to be surveyed at various localities. Three surveys of a miscellaneous type, two at Fort Providence and one at Snowdrift, are also planned. It is hoped to have the above surveys done by staff surveyors. In addition, it is expected that private surveyors will survey, on behalf of the Division, nine miscellaneous parcels of land, two at Yellowknife, six along the McKay Lake road, and one in the vicinity of Frank Channel.

INTERDEPARTMENTAL COMMITTEE ON AIR SURVEYS

Responsibilities To receive from all federal government services requests for air surveys, and to prepare programs of air survey priorities; to issue technical instructions for carrying out such programs, and to co-ordinate the activities of commercial and government air survey organizations.

Long-term Plans

The Arctic Islands and all the mainland of Canada, except for about 20,000 square miles southeast of Ungava Bay, are now covered with vertical air photography satisfactory for small scale mapping. Lower altitude large scale photography of special areas for development, scientific investigations, or large scale mapping will be provided.

Review of 1963 Operations

Extremely poor photographic weather prevented completion of the southeast Ungava area, part of the Mackenzie River, and Nottingham Island.

A new contract was let for photography of southeast Yukon and southwest Northwest Territories, and approximately fifty per cent of the area was completed.

The following northern areas were photographed:

- (1) The Whitehorse area
- (2) A section of Dawson - Eagle Plains road
- (3) The Canol road from MacMillan River to Ross River
- (4) Sweetgrass, Alberta (Wood Buffalo Park)
- (5) Hay Camp, Alberta (Wood Buffalo Park)
- (6) Pine Point Airstrip
- (7) Fort Providence

(8) Nahanni Butte

(9) Part of the Alaska Highway in the vicinity of Carmacks

(10) An area near Yellowknife

A special project using colour and black and white photography was undertaken for the Department of Mines and Technical Surveys over part of James Bay and southeastern Hudson Bay.

Plans for 1964

It is hoped that all areas not completed in 1963 will be photographed in 1964.

Up-to-date photography will be undertaken in the Mackenzie Delta and in the vicinity of Cape Parry. Part of the west coast of Hudson Bay along the N. W. T. shore will be photographed.

MARINE SCIENCES BRANCH

Responsibilities . To carry out hydrographic and oceanographic surveys in Arctic waters of Canadian interests.

To produce and distribute charts, mailing directions, tide tables, and reports based on the survey activities and on information from all sources.

To carry out research on the oceanography of the region.

Long-term Plans

To complete standard hydrographic surveys of the Arctic coast as soon as possible, and to continue the publication and maintenance of up-to-date charts of the region. To carry out reconnaissance surveys where requirements exist for charting ahead of the regular surveys. To maintain reliable sailing directions as published in the Pilot of Arctic Canada. To establish and maintain a network of gauging stations to meet the needs of scientific research. To carry out oceanographic and current surveys to meet the general scientific requirement including that of defence. To improve steadily the capability to carry out fundamental research on Arctic oceanography and the means to conduct observations in the region.

Review of 1963 Operations

Oceanography

Extremely adverse ice conditions in Canadian arctic waters during the shipping season placed a severe restriction on the movement of ships and confined marine research activities to limited navigable waters.

A successful oceanographic cruise was carried out from CSS "Baffin" in the Labrador Sea and Davis Strait during the period May 21 - June 16. The purpose of this cruise was to participate in the second phase of the International Commission for the Northwest Atlantic Fisheries (ICNAF) survey of Greenlandic and Canadian waters. Fifty oceanographic stations were occupied in the Labrador Sea, Davis Strait and Baffin Bay north of 57° north latitude. Continuous magnetic, bathymetric and sea surface temperature observations were maintained throughout the cruise. An oceanographic team from the Bedford Institute of Oceanography (BIO) also took part in the cruise of the USS "Atka" in the Labrador Sea from May 16 to June 14. It was planned that the observations recorded aboard "Atka" would correlate with those of the "Baffin" ICNAF cruise in the Labrador Sea

and Davis Strait. Unfortunately, the "Atka" was damaged early in the season and was forced to return to Argentia, Newfoundland, for repairs, but 14 oceanographic stations were completed in the western Labrador Sea. Twenty-five Canadian scientists, technicians and summer students participated in these programs.

The programmed arctic cruise of CCGS "Labrador" was seriously delayed owing to severe ice conditions in northern Baffin Bay and additional ship commitments during the early part of the season. Conditions improved significantly by mid-September permitting completion of a detailed oceanographic program in northern Baffin Bay, Jones Sound, Kane Basin, Kennedy Channel, and Hall Basin. Seventy-one oceanographic stations were completed.

The second phase of the arctic oceanographic program was also conducted from CCGS "Labrador" in Baffin Bay. This survey included a series of ice forecast stations in Baffin Bay as requested by the U.S. Navy Oceanographic Office. The B10 program consisted of a number of deep-water stations in western Baffin Bay and Davis Strait.

The marine geological program in the western arctic islands was continued with logistic support of the Polar Continental Shelf Project. During the period July 1 - 29, a series of bottom samples and cores was obtained in the western section of Prince Gustaf Adolf Sea. Additional bottom sampling was conducted from the "John A. Macdonald" in the vicinity of Resolute in support of a Pacific Naval Laboratory geophysical study.

The Polar Continental Shelf Project undertook hydrographic surveying in the Hell Gate, Cardigan Strait region. The work was carried out from established shore camps supported by air from Resolute Bay. Much of this survey was completed using a specially modified transducer towed from a low flying helicopter.

In cooperation with the National Research Council, a study of the operation of a bubbler system was carried out in the Tuktoyaktuk area. This comprised a time series of observations through the winter and a program of oceanographic observations from CSS "Richardson" during the summer season.

Twelve oceanographers, technicians and summer assistants participated in the archipelago surveys.

Hydrography

The new Canadian Scientific Ship "Richardson" carried out her first full season in the Western Arctic. She conducted reconnaissance surveys from Herschel Island to Pearce Point Harbour and as far north as Jesse Harbour in Prince of Wales Strait. A launch party worked on the entrance to the Mackenzie River, just below Great Slave Lake.

Hydrographers were again assigned to three Canadian Coast Guard Icebreakers. Extremely bad ice conditions in the Eastern Arctic kept CCGS "Sir John A. Macdonald" and CCGS "d'Iberville" fully occupied on re-supply and ice escort duties leaving little time for hydrographic work. However, seven thousand miles of track soundings were logged by the "John A. Macdonald" in Baffin Bay, Nansen Sound, and in the shipping route through Jones Sound to Eureka. An attempt was made to steam west-ward into M'Clure Strait but heavy ice in Viscount Melville Sound made it impractical for the ship to proceed beyond 105° west longitude. On the return voyage "d'Iberville" completed several thousand miles of track soundings in Baffin Bay and Davis Strait.

CCGS "Camsell" was more successful in the Western Arctic and a considerable amount of survey control was established. A large area was sounded in the approaches of Cambridge Bay together with several other smaller surveys along the re-supply route.

The new tide guages were established at Frobisher Bay and Nain; five guages at Tuktoyaktuk, Cambridge Bay, Resolute, Alert and Churchill were inspected and serviced.

A total of 32 personnel were employed on a seasonal basis for hydrographic work in the north.

Nine new hydrographic charts, one plotting sheet, and seven reproductions of America charts of northern waters were published together with fifteen new editions and eighteen advance prints. Supplements were issued to the three volumes of the Pilot of Arctic Canada. As a supplement to the regular tide tables, a special issue of "Tide Tables, Hudson Bay and Arctic Waters" was issued giving full predictions from June to November, 1963, for seven points.

Plans for 1964

Oceanography and Hydrography

The new Canadian Scientific Ship "Hudson" will start on the first systematic sounding of Hudson Bay as part of a combined oceanographic-hydrographic operation. "Hudson" will be employed essentially in geophysical studies in the Bay and will possibly be assisted by a charter ship for seismic and gravity surveys. It is expected that approximately four months of investigations will be carried out in Hudson Bay.

CSS "Richardson" will extend her operations as far east as Coppermine in the Western Arctic. CSL "Rae" will undertake a reconnaissance of the Mackenzie River between Fort Providence and Norman Wells to obtain data for a new volume of river charts.

Programming for the Coast Guard ships is not yet complete but it is expected that hydrographers and oceanographers will be assigned to certain Coast Guard ships for surveys and scientific studies.

The seven permanent tide gauges in the North will be serviced and temporary gauges established in Foxe Basin.

DEPARTMENT OF NATIONAL DEFENCE

ARMY

Responsibilities Land defence of the North;

Maintenance of the Canadian portion of the Alaska Highway; the Haines Road, the access roads to certain airfields, and maintenance of seven emergency landing strips connected with the Highway;

Operation of the Winter Warfare Training Wing, and provision of administrative support to the Canadian Armed Services, the USAF, the Churchill Research Range, and various research and development organizations at Fort Churchill, Manitoba.

The Army Survey Establishment carries out defence mapping in the North and assists the National Topographic Survey mapping the area.

Long-term Plans

Normal planning for land defence. The continued mapping of the North as required for defence purposes.

Review of 1963 Operations

Northwest Highway System (Alaska Highway) and Haines Road

Haines Road

The Haines Road is being kept open during the Winter months of 1963-64 on an experimental basis for a trial period of 1 year in accordance with the Cabinet's decision of October 24, 1963. Under authority of this decision, the Department of Public Works was given authority to negotiate with the State of Alaska for the rental of road maintenance equipment to keep open that section of the Haines Road not now kept open under other arrangements. Army Headquarters was advised on November 20, 1963 that the Alaska Highway Department, acting as agents of the Department of Public Works, was established at Camp 75 in order to carry out the task of snow clearing and maintenance, and the Northwest Highway Maintenance Establishment crew at this location was withdrawn.

The agreement for Winter maintenance of the Haines-Fairbanks pipeline and for the associated Winter use and maintenance of portions of the Haines Road, dated January 16-17, 1957, and subsequent extensions and modifications thereto, expired on July 1, 1963. An extension and revision of the agreement had been drafted, but owing to recent developments certain conditions in this draft had changed. Therefore, the

External Affairs Department prepared a draft note to the United States Embassy advising that it was necessary to reach a new agreement. It was also indicated to the Embassy that the new arrangement should take into account the establishment in 1962 of a new pumping station at Mile 94, and the recent developments concerning the clearance of the central portion of the road on an experimental basis during the 1963-64 Winter season.

The External Affairs draft note proposed that the Governments of Canada and the United States agree as follows:

- (1) The portion of the road between Haines Junction, Yukon Territory, and Mile 94 (Blanchard River Pumping Station) will be regularly cleared by an agency of the Canadian Government. All costs of this continuous winter maintenance will be reimbursed to the Canadian Government by the United States Army, Alaska;
- (2) The portion of the road between Mile 48 and the Alaska border (Mile 42) shall continue to be cleared by an agency of the United States Government or by the State of Alaska;
- (3) The appropriate agencies of the two Governments may make direct arrangements for the detailed implementation of the foregoing provisions.

It was also indicated in the draft note that the proposal, if acceptable to the Canadian Government, together with the United States reply would constitute an agreement on this subject, effective on the date of the United States reply, and continue in effect through the 1963-64 Winter snow clearance season, after which time the parties may decide to consider other arrangements for the Winter maintenance of the Haines Road.

The Haines Road was closed owing to blockage by a heavy snow fall on November 13, 1963 for six hours, and from 0600 hours on November 15, 1963 until 1330 hours on November 17, 1963 owing to heavy snow fall and winds up to 50 M. P. H. On November 25-26 the road was also closed due to heavy drifting. No other reports have been received to date by Army Headquarters to indicate further road closures.

Traffic Count. The volume of traffic passing through customs at Mile 1202 on the Alaska Highway, and at Mile 42 on the Haines Cut-off Road for 1962 and 1963 is shown below. The 1963 figures are for the period January 1, 1963 to November 30, 1963.

Alaska Highway

<u>Northbound</u>			<u>Southbound</u>	
<u>1962</u>	<u>1963</u>		<u>1962</u>	<u>1963</u>
16, 472	19, 615	Vehicles	15, 921	17, 383
45, 955	53, 968	Passengers	47, 206	52, 768
21, 660	24, 679	Tonnage	9, 693	9, 639

Haines Road

<u>Northbound</u>			<u>Southbound</u>	
<u>1962</u>	<u>1963</u>		<u>1962</u>	<u>1963</u>
4, 312	5, 246	Vehicles	4, 329	6, 077
11, 890	12, 759	Passengers	13, 602	15, 355
1, 908	11, 408	Tonnage	3, 098	2, 080

Army Survey Establishment

The main survey operation in 1963 covered the area Stefanson Island - Prince of Wales Island - Somerset Island and the Boothia peninsula, and can be broken into two main phases:

Phase 1 - Roving Deposit April 26 - May 13. The Roving Deposit was a joint RCAF - Army operation involving the stocking of four camps and twenty-two gasoline caches. The operation took twelve flying days using three DC 3 aircraft and involved 59 flights totalling 12, 000 miles.

Phase 2 - Survey Operation May 13- August 6. The survey was carried out using two traverse teams with a S-55 and a Bell G2A helicopter for transporting the teams. Distance measurements were made with tellurometers and 2, 700 miles were traversed. The control established is sufficient for the compilation of 25 maps at a scale of 1:250, 000, covering an area of approximately 166, 000 square miles.

Surveys for site plans of six settlements were carried out for the Department of Northern Affairs. The plans are to be published at a scale of 1:1200. The surveys were carried out using local facilities for transport, except that a Beaver aircraft was used for flying photography and transporting the party from site to site.

A reconnaissance was carried out by two officers for next summer's survey operation. The reconnaissance party was also responsible for checking the unloading and stockpiling the gasoline and supplies for the 1964 Hall Beach Operations.

Royal Canadian Corps of Signals

The Signals Corps continued to operate its radio station at Alert.

Under the auspices of Quebec Command 6 Signal Squadron conducted a small exercise in Northern Quebec in February, 1963. The main purpose of the exercise was to gather data on frequencies needed to support any operations conducted in the area.

Fort Churchill

The role of the establishment at Fort Churchill is the acquisition of knowledge and the development of techniques and equipment to enable men to live and fight in the Arctic and sub-Arctic throughout the year. Its secondary role is to provide support facilities for other units having research or operational commitments, such as the United States Air Force - Churchill Research Range.

During the year the Canadian Army conducted Arctic training and various tests and trials of equipment.

Plans for 1964

Northwest Highway System

Following a Cabinet decision, the Canadian Army began planning to turn over the responsibilities of the Northwest Highway System to the Department of Public Works on April 1, 1964.

Fort Churchill

Following Cabinet agreement in principle with the proposal of the Minister of National Defence that it withdraw from Fort Churchill in 1964, the Canadian Army began planning to transfer its responsibilities to other Government Departments.

Exercise FROZEN JUMP 2 will take place during the period January 10 - February 12 to indoctrinate a company of 1 Royal Scots in arctic defence techniques and train them in some aspects of winter warfare.

Army Survey Establishment

A survey of the Melville Peninsula extending down the coast of Hudson Bay to Eskimo Point is to be carried out during the summer. The operation is to be conducted as in previous years and the RCAF will be assisting with caching supplies on Roving Deposit.

A reconnaissance for the 1965 summer operation on the North coast of the mainland between Stanton and Coppermine will be carried out in late summer.

ROYAL CANADIAN NAVY

Responsibilities The support of Canada's external and defence policies in the North by contributing to the maintenance of Canadian sovereignty in the Arctic and supporting operations in Arctic waters.

Long-term Plans

To maintain close liaison with agencies investigating various defence problems in the Arctic in order that an Arctic Defence Plan may be developed further.

Review of 1963 Operations

Ship Operations

In August, a frigate visited the Greenland ports of Sondrestrom, Godthaab, Gronnedal and Julianehaab.

Naval Radio Station Frobisher

In addition to normal radio activities, seasonal naval radio activities were carried out in Frobisher in support of DEW Line re-supply operations.

Alert Radio Station

The RCN continued to contribute personnel for the joint operation of Alert Radio Station.

Other Naval Radio Stations

Naval radio activities were carried out at Churchill and Inuvik.

Clearance Diving Team

Two RCN clearance diving teams of about six per team provided assistance in connection with DEW Line re-supply in the Eastern and Western Arctic. The teams were employed on landing beach surveys and underwater obstruction demolition in advance of and during the supply program.

Plans for 1964

Operation of naval radio stations will continue at the present level of activity.

The RCN will continue to support other Government departments in scientific and technological research programs in the Arctic.

RCN clearance diving teams will be made available to provide assistance in DEW Line re-supply.

ROYAL CANADIAN AIR FORCE

Responsibilities All aspects of air defence. Operation of service airfields in the North. Arctic aerial surveillance and other reconnaissance flights. Air resupply of Arctic weather stations and the Army station at Alert. Search and rescue operations, including mercy flights and emergency supply when no commercial services are available; co-operation with scientific and government parties in the North as required.

Long-term Plans

Continuation of present activities except for the retention of permanent RCAF establishments at Fort Churchill, Manitoba, and Resolute Bay, NWT.

Review of 1963 Operations

Arctic Reconnaissance

Four hundred hours were flown in general reconnaissance and surveillance of the Arctic Islands and of the Polar Basin by Lancaster aircraft.

Airlift

In addition to numerous special flights in the north, 1200 hours were flown in the Arctic and a total of 9,000,000 lbs. of supplies and POL was airlifted. The introduction of bulk fuel carrying tanks installed in the Hercules aircraft together with the installation of compatible ground facilities at the Joint Arctic Weather Stations has simplified the task of airlifting POL.

Search and Rescue

Nine major searches were conducted in the north involving 1611 flying hours. Six of the searches were for missing aircraft, two for missing persons and one for a marine craft. In addition numerous mercy flights were carried out.

Survival Training

Arctic survival training was conducted at Resolute Bay during the winter months. In addition to RCAF trainees, a number of representatives of foreign services and civilian organizations such as the US Navy and DOT took part.

Distant Early Warning Line

The Canadian portion of the DEW Line is under the operational control

of the Commander, Northern NORAD Region, North Bay, Ontario.

Plans for 1964

Arctic Reconnaissance

Arctic Reconnaissance will be carried out on a reduced scale compared to 1963 operations.

Airlift

Airlift for resupply of the Arctic weather stations will be provided by aircraft operating from Resolute Bay in April and September using C-130B aircraft. Emergency supply drops will be made as required. Approximately 1800 tons of supplies and POL will be airlifted from Thule to Alert during the spring and summer. Approximately 125 tons of POL and supplies will be distributed to various Arctic locations in support of the Army Survey Team and DRB.

Search and Rescue

Search and Rescue operations will be conducted as necessary.

Survival Training

Arctic Survival Training will be carried out during the winter months from Resolute.

DEFENCE RESEARCH BOARD

Responsibilities To bring scientific knowledge and experience to the assistance of the Armed Services in solving problems of military operations in high latitudes. To sponsor and undertake research and technical projects of particular assistance to the Armed Services.

Long-term Plans

Research projects of two main types will be conducted: basic studies in the laboratory, and applied studies or field investigations. Almost every aspect of science is involved, with emphasis on factors, particularly cold, affecting the behaviour of man and his machines, and the physical sciences affecting communications, movement, and navigation in and under the sea, on land, in the air, and in outer space.

Review of 1963 Operations

The Defence Research Board conducted research projects on arctic and geophysical problems through its Physics, Engineering, and Biosciences directorates at Ottawa, the Defence Research Northern Laboratory at Fort Churchill, the Defence Research Telecommunications Establishment at Ottawa, the Prince Albert Radar Laboratory, the Defence Research Medical Laboratories at Toronto, the Pacific Naval Laboratory at Esquimalt, the Naval Research Establishment at Dartmouth, and the Canadian Armament Research and Development Establishment at Valcartier. It also supported and coordinated research in the north by means of grants and contracts to universities, government agencies, and non-government research organizations. Close collaboration was maintained with research and development agencies in the United States and Britain.

The Defence Research Northern Laboratory

The Defence Research Northern Laboratory at Fort Churchill continued in the role adopted in 1956 - that of a northern laboratory for visiting scientific teams. In addition to ad hoc and short-term projects and support of the rocket range, work was continued on auroral observation studies. The rocket range at Fort Churchill has been fully operational throughout the year. A number of Canadian research rockets have been fired in addition to programs sponsored by the US National Aeronautics and Space Administration, the US Air Force Office of Aerospace Research and the US Office of Naval Research. There has been some discussion on the subject of an extended safety area for the rocket range to permit firing of multi-stage rockets. This extension has been agreed by the Canadian authorities conditional upon approval on a case-by-case basis owing to the increasingly heavy air traffic using the airway over Hudson Bay. The agreement under which the range is jointly operated by US and Canada terminates in June, 1965, and the question of an extended safety area will be one of the matters to be examined when renewal comes to be discussed.

Radio Physics

The telemetry station at Resolute Bay continues to relay data from the Alouette top-side sounder satellite. It has been operating continuously since the satellite was launched in September, 1962 and has contributed a vast quantity of information about the ionosphere in northern latitudes. Special low-power ionosondes, which were installed at Baker Lake, Frobisher and Goose Bay to sound the ionosphere from below while the satellite made measurements from above, continued in operation for one year after the launch of the satellite. They were closed down at the beginning of October.

The rest of the program of vertical and oblique incidence soundings continued at a slightly reduced level. Vertical incidence sounders are operated at Resolute Bay and Fort Churchill with the assistance of the Department of Transport. The trans-auroral oblique sounding project between Ottawa and Resolute Bay continued in operation until October, 1963 when it was terminated.

Studies of the lower ionosphere were continued at increased level in 1963. Variations in amplitude and phase of low frequency transmissions from various transmitter sites were recorded at Fort Churchill. A new fixed frequency ionosonde was installed at Resolute Bay to measure partial reflections from the lower ionosphere. Direct measurements of the composition and spatial structure of the lower ionosphere were carried out by means of rocket firings from Fort Churchill.

The chain of riometer stations measuring absorption of extra-terrestrial radiations by the ionosphere continued in operation. Northern riometer stations are located at Resolute Bay, Cape Jones, and Fort Churchill.

Geophysical work in northern Ellesmere Island

A total of 25 scientists and student assistants spent periods varying from two weeks to four months at the Defence Research Board stations at Hazen Lake and Tanquary Fiord. About half of these were Defence Research Board employees or working under Defence Research Board contract. Others, to whom field support was provided, were from other government departments (Agriculture, Mines and Technical Surveys). Scientific work done by the Defence Research Board group included 30 full oceanographic stations in Tanquary Fiord, the Greely Fiord area, and off the Ward Hunt Ice Shelf; three-hourly synoptic meteorological records at both stations, plus about 100 pibal ascents, and detailed radiation and soil temperature measurements at Tanquary; re-survey and ablation measurements on the Ward Hunt Ice Shelf; glacier tongue surveys and ice cap regime studies at Tanquary and a traverse from Gilman Glacier (Lake Hazen) to Air Force Glacier (near Tanquary Fiord); preliminary studies of sea ice cores and measurements of ablation on the fiord ice; and observations on altimetry, tidal range, geomorphology and glacial geology, archaeology, and wildlife.

Under-Ice Acoustics

A study of acoustic propagation and ambient noise under ice was begun at the Pacific Naval Laboratory in 1959. In 1963 observations of natural ambient noise were made at Isachsen in mid-winter. In the summer it had been hoped to obtain data from deep water in the Arctic Ocean under summer conditions from CCGS John A. Macdonald. Severe ice conditions prevented this, but some work was done in Prince Regent Inlet.

A complementary under-ice acoustic program is being carried out in the Gulf of St. Lawrence by the Naval Research Establishment.

Conjugate Point Experiment

The Pacific Naval Laboratory/Stanford University joint program continued through 1963 with additional participation by the National Bureau of Standards and the Dominion Observatory. Measurements were made at Byrd Station in Antarctica and at its conjugate point near Great Whale River. Measurements were made at Great Whale River of: magnetic micropulsations, VLF noise, ionospheric absorption of radio waves, and fluctuation in the Earth's magnetic field. Good correlation was obtained between the measurements of magnetic activity at the conjugate points. VLF recordings were made simultaneously with overhead passes of the Alouette satellite to give data on VLF noise above and below the ionosphere. Associated with the conjugate point experiment was the installation of a VHF transmitter by the University of Western Ontario to study ionization irregularities over the path between Great Whale River and London, Ontario.

Biting Flies

As in 1962, the Department of Agriculture, supported by the Defence Research Board, was very active at Lake Hazen, Ellesmere Island. The emphasis was on the detailed life cycle and behaviour patterns of the mosquitoes in the area. It was shown that, although the female mosquito prefers a blood meal, egg development can, if necessary, be completed autogenously, i.e. by the use of the insect's own body tissue. The resulting number of viable eggs per female is usually much less.

Studies were conducted at Churchill, Manitoba, to determine whether repeated application of DDT for mosquito control had caused the development of resistance to the chemical by the insects as has occurred in many parts of the world. The experiments showed that there was no evidence of this; in fact, actual residual control of mosquito larvae appeared to be obtained. It is planned to investigate this factor in more detail in 1964.

A stick form of diethyltoluamide gave good protection from biting flies in northern field trials. However, the sticks apparently soften during prolonged storage and are then wasteful in application. Also the initial cost of the solid formulation may be higher than for the standard solution of repellent.

Environmental Physiology

The Climatic Suite at DRML is now in operation. Work on physiological and metabolic responses to cold exposure in humans has been initiated. Animal studies are continuing to investigate; (i) the effect of cold on cholesterol metabolism, (ii) the effect of varying diets on tolerance to cold exposure, and (iii) blood pressure responses during hypothermia.

Grants and Contracts

A number of extra-mural studies were supported by grants and contracts with universities and other non-government agencies.

Grants

- (1) To McMaster University for a study of methods of interpreting surface and sub-surface conditions in muskeg from air photographs.
- (2) To McGill University for a study of the radiation characteristics of the Subarctic.
- (3) To McGill University for research on the shearing characteristics of frozen soil.
- (4) To the Institute of Northern Studies, University of Saskatchewan, for research on the sub-arctic sand dunes south of Lake Athabasca.
- (5) To the Arctic Institute of North America for a heat budget analysis of Jones Sound.
- (6) To the Arctic Institute of North America to assist in the preparation of an Arctic Bibliography.
- (7) To McGill University for a study of the attenuation of surface waves near pack ice.
- (8) To McGill University for work on the reactions of the constituents of the upper atmosphere.
- (9) To the University of Saskatchewan for the support of research at the Institute of Upper Atmospheric Physics.
- (10) To the University of Western Ontario for research on the physics of the troposphere as related to UHF radio transmissions.
- (11) To the Canadian Military Services College, Royal Roads, for a study of the roles of the ionosphere and sun in the origin of the natural electro-magnetic background in the frequency range 0, 001 c/s to 100 Mc/s.

- (12) To the University of Western Ontario for studies of VHF radio wave scattering in the ionosphere.
- (13) To the University of Toronto for studies of the infra-red emission spectrum of the upper atmosphere.
- (14) To the University of Western Ontario for support of ionospheric studies using satellites.
- (15) To the University of Toronto for studies of hypothermia and endocrine function, the biochemical mechanisms involved in cold adaptation, and the effects of cold on pharmacological reactions.
- (16) To McGill University for studies of the effects of cold injury on the vascular system and the pathogenesis of cold injury.
- (17) To the University of Manitoba for studies of frostbite, cold acclimatization, and accidental hypothermia.
- (18) To the University of Ottawa for studies of endocrine function of cold-exposed animals and of resistance and acclimatization to cold.
- (19) To Laval University for a study of circulatory adaption to cold stress.
- (20) To the University of Western Ontario for the investigation of changes in muscle after cold acclimatization.
- (21) To Queen's University for research on fat metabolism of cold exposed animals.
- (22) To the University of Alberta for research on the flight range of biting flies.
- (23) To Queen's University for research on the reactive principles and specificity of bites of bloodsucking arthropods with particular reference to mosquitoes.
- (24) To the University of Western Ontario for a study of factors in the the attractiveness of objects to adult Aedes aegypti.
- (25) To the University of Manitoba for research on the behaviour of biting flies with special reference to orientation and feeding.
- (26) To the University of Alberta for field studies on mosquito biology.
- (27) To the Ontario Agricultural College for studies on the life history and ecology of Simulium rugglesi.

- (28) To the University of Saskatchewan for research on the retro-cerebral endocrine system in prairie mosquitoes.
- (29) To the University of Western Ontario for a study on the reaction of man and animals to cold and damp.
- (30) To the University of Alberta for an investigation of the mode of action of biting fly repellents.

Contracts

- (1) With McGill University for research on ice physics, with special reference to removing ice from runways and the study of sea ice.
- (2) With McGill University for meteorological and geophysical work at Lake Hazen.
- (3) With the Arctic Institute of North America to provide limited consultant work.
- (4) With the Scott Polar Research Institute for the provision of data resulting from the Institute's work in polar research.
- (5) With McGill University for a study of terrain evaluation and classification for mobility.
- (6) With McGill University for stratospheric research, and for the production of an atlas of 25-mb synoptic weather maps for the Northern Hemisphere.
- (7) With the University of Western Ontario for spectroscopic studies of upper-atmospheric excitation, ionization, and re-combination processes.
- (8) With the University of Saskatchewan for optical studies of auroral phenomena at Fort Churchill, Manitoba.
- (9) With the University of Saskatchewan for research on radar aurora at UHF and its correlation with geophysical phenomena. This contract is in support of the experimental program of the Prince Albert Radar Laboratory.

Plans for 1964

It is expected that the Board's program will be continued on approximately the same scale as in 1963.

The satellite telemetry station at Resolute Bay is expected to continue in operation during 1964. It will be used to relay data from the NASA/NBS S-48 top-side sounder, expected to be launched in early 1964, in addition to data from the Alouette satellite. An additional fixed-frequency ionosonde for the partial reflection experiment is planned for installation at Fort Churchill.

It is intended to continue field programs from the research stations at Lake Hazen and Tanquary Fiord.

The conjugate point installations will be improved for operations through the International Quiet Sun Year.

NATIONAL FILM BOARD

Responsibilities

The production of motion pictures, filmstrips, still photographs, and still photo stories about the Canadian North, its people and their activities, and its resources; arrangements for distribution of this film material in Canada and abroad, including servicing of northern posts and settlements; assistance to government agencies by advising in the use of visual media and in planning audio-visual programmes for informational and instructional purposes.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1963 Operations

During 1963 the National Film Board continued to fulfil its obligations in bringing to peoples of the northern region as varied and interesting a programme of films as possible and to the rest of Canada and to audiences about the world, stories about the northland, its development and its people.

1963 Completions

KENOJUAK - A 35mm colour film of Eskimo print making in Dorset, produced with the co-operation of the Department of Northern Affairs and National Resources, for theatrical and non-theatrical distribution.

ALEXANDER MACKENZIE - LORD OF THE NORTH - 3 reels, 16mm, colour. Historical film about the original journey by MacKenzie and his party down the MacKenzie River to the Arctic Ocean.

MANOUANE RIVER LUMBERJACKS - 16 mm, B&W.

The hard life and austere living conditions of the average lumberjack in the bush in northern Quebec. Filmed at a camp on the banks of the Manouane River.

EDGE OF THE BARRENS - 2 reels, 35 & 16mm, colour.

Study of life, geology, climate, etc.

ESKIMO VILLAGE, RESOLUTE

A newsreel release about an Eskimo cooperative store in Resolute, how this cooperative venture works and how the introduction of such new practices affects Eskimo life. This newsreel item has found wide distribution in the United States and abroad having been shown in both theatres and on television.

Photostories

The following photostories dealing with northern subjects were produced for sale to Canadian and foreign newspapers during 1963:

Mobile Libraries - the work of the Peace River region's travelling library van from Dawson Creek, British Columbia.

Polar Continental Shelf - Canada's long-range program of geographic and scientific exploration across the vast region of the Arctic Islands.

Upper Mantle Project - description of one aspect of the Canadian contribution to the international geophysical Upper Mantle Project. Operation Muskox.

Flying Geologists - airborne operations of GSC in campaign to complete geological mapping of Canada by 1970. Covers areas of Yukon, N.W.T., Ellesmere Island.

The first three of the above were taken by United Press International for their distribution. "Flying Geologists" was taken by Associated Press.

Filmstrips

The eight filmstrips of the series CANADA'S NORTH, completed late in 1962, were released in 1963. They were designed primarily for classroom use and have these titles:

ESKIMO SCULPTURE, ESKIMO PRINTS, CANADA'S NORTH: INTRODUCTION, CANADA'S NORTH: MACKENZIE RIVER - HIGHWAY TO THE NORTH, CANADA'S NORTH: THE MODERN ESKIMO, CANADA'S NORTH: THE CARIBOU ESKIMO, CANADA'S NORTH: THE ARCTIC ISLANDS, CANADA'S NORTH: THE YUKON.

Distribution

The demand for 16mm films from isolated communities in the North continues to increase beyond our resources. Whitehorse, Fort Smith, Newfoundland Regional office and the Montreal Outpost Library record 5,712 screenings

during 1963. The Outpost Library in Montreal booked 1,833 and there were many more requests for titles which were not available.

A physical check of our Outpost Library films resulted in the destruction of over 400 prints last year and this has had an effect on our efforts to increase Outpost film service at this time. Fourteen new prints have been added and we hope to add more titles next year.

Films on Canada's North continue to receive wide circulation in Canada and abroad through theatrical, T.V., and community channels. The latest film *EDGE OF THE BARRENS* is extremely well done and will be distributed theatrically before being cleared through other channels of distribution at home and abroad.

A representative from the Board's Edmonton office visits Fort Smith once a year to examine our service and supply to that area and to make improvements where necessary.

A Vancouver representative visits the Yukon Territory at least once a year where he remains for two weeks. During this period an annual Film Exhibition is held at Watson Lake, Whitehorse, Mayo, Calumet and Elsa. This program runs for three nights at the first three points, for two nights at Calumet and one night at Elsa. Large blocks of free loan films are maintained both at Whitehorse and Fort Smith.

T.V. stations at Whitehorse, Dawson Creek, Prince George, Terrace, Thomson, Timmins, and Rouyn telecast 513 N.F.B. films with a running time of 14,543 minutes.

Plans for 1964

The following film subjects are being researched for a production start in the current fiscal year or consideration for 1964/65 programming.

THREE R's AT INUVIK

Children of the Canadian Arctic, White, Indian, Eskimo, mingle in the federal school at Inuvik in search of learning.

HUDSON - 3 reels, 16mm, B&W

Discoverer of Hudson Bay on whose voyage the British claim to Hudson Bay was based.

RCMP CONSTABLE IN THE NORTH

The more human side of the RCMP's role in the far north.

MUSK OX

A documentary about the domestication of the musk-ox project including the exciting moments of catching these animals.

FRANKLIN EXPEDITION

The story of the many attempts to find the survivors which resulted in the map of the Canadian North being drawn.

BRITISH CANADIAN ARCTIC EXPEDITION

Interview on the 1933-39 British Canadian Arctic Expedition.

GLACIATION - 1 reel, 16mm, colour, for classroom use.

A study of the effects of glaciation on this continent and in particular on the Canadian land. Originally planned for 1963 production but now carried over to 1964.

THE ANNANACKS - 3 reels, 16mm, B&W

The story of an Eskimo group in Northern Ungava and how they helped themselves to a better way of life. To be made from the one hour show produced by Crawley Films.

NORTHERN VOYAGE - 1½ reels, 16mm, colour

Story of the ice-breaker, John A. MacDonald's northern trip from Resolute to Eureka and Tanquary.

Filmstrips

The filmstrip GLACIATION, mentioned in our last report, will be completed in 1964. Other filmstrips and slides series related to the north are in production and are to be released in this period. They are:--

CANADIAN SHIELD (Precambrian Shield)

Classroom filmstrip. Will be completed. The tentative titles are: INTRODUCTION, FORESTRY, MINING, TRANSPORTATION, HUNTING & FISHING.

FUR TRADE

A series of history filmstrips for classroom use now under preparation but will probably not be completed until 1965.

ARCTIC WILDFLOWERS

A junior science filmstrip.

NORTHERN GOVERNMENT

Four filmstrips sponsored by the Department of Northern Affairs and National Resources titled: WHAT'S GOVERNMENT, GOVERNMENT IN ACTION, STRUCTURE OF GOVERNMENT IN THE NWT, HISTORICAL DEVELOPMENT OF THE NWT GOVERNMENT.

Slide Sets

A group of slide sets will be released by the NFB on topics like CARIBOU ESKIMO, ESKIMO PRINTS, ESKIMO SCULPTURE and GLACIATION.

Flat Picture Sets

A production of flat picture sets is contemplated on MODERN ESKIMO This will be produced in colour in cooperation with the Queen's Printer.

DEPARTMENT OF NATIONAL HEALTH AND WELFARE

HEALTH

Responsibilities

Northern Health Service

All responsibilities of the federal government in the field of health, except where military authorities operate health facilities within military establishments.

All responsibilities of the territorial governments in the field of health, undertaken by arrangements with these governments, except the hospital insurance program. These arrangements are subject to the sharing of costs between the federal and territorial governments in approximate proportion to their respective responsibilities.

Consultative Services

Public Health Engineering, Epidemiology, Maternal and Child Health, etc., on request of the responsible authorities.

Long-term Plans

To develop northern health services, to co-ordinate all federal health services, and to co-operate with community health services in the same manner as would a department of health in a province. This system should, within the budgets of the interested agencies, provide for the types of health services most suitable for the unique distribution of population. To continue the operation of all existing health units in the Territories and to develop new facilities, in co-operation with the Department of Northern Affairs and National Resources, as and when the need for them is demonstrated and resources are made available.

Review of 1963 Operations

The implementation of both the Yukon and Northwest Territories Health Plans (1962-67) continued. The construction of the new Frobisher Bay Hospital continued, and it is expected to be ready for occupation in April 1964. The new Health Centres at Hay River and Yellowknife were

completed and are now in full operation. The conversion of the Watson Lake Health Centre into an eight bed Nursing Station was also completed, and it is now in operation with a complement of 3 nurses.

Health Stations were erected at Ross River (Yukon), and at Clyde River and Igloodik (N. W. T.).

A Sanitarian and a Zone Supervisor of Nurses were recruited for the Yukon Territory and dental officers were recruited for Hay River and Fort Smith.

An explosive outbreak of Tuberculosis occurred at Eskimo Point in the Central Arctic and a total of 80 cases was discovered in this small settlement of 330 people, i. e. 24% of the population. Three chest X-ray surveys were conducted in this area and continuing surveillance will be maintained. Outbreaks of influenza (2, 500 cases) were reported from the Inuvik, Fort Smith, Fort Simpson and James Bay areas in April, and 19 cases of dysentery were reported from Coral Harbour. Minor outbreaks of measles, German measles and infectious hepatitis were reported.

A community Health Worker Training Course was held in Cambridge Bay during the summer, and eight Eskimo students passed this course and are now employed by the Northern Health Service at Inuvik, Aklavik, Tuktoyaktuk, Coppermine, Cambridge Bay, Spence Bay, Baker Lake and Rankin Inlet.

A Pilot School Dental Project was initiated at Whitehorse with a view to estimating costs of a full school dental service for future Health Plans.

The Northern Health Service continued to provide professional advice to the Territorial Hospital Insurance Services Board in connection with improvements to non-government hospitals.

Plans for 1964

Funds have been requested for the erection of new Nursing Stations at Fort Franklin and Pond Inlet, and for the replacement of the Nursing Station at Aklavik. Health stations will be erected at Whale Cove and Broughton Island. It is hoped to recruit two Sanitarians for the Northwest Territories and a Medical Officer for Cambridge Bay.

The Public Health Program as outlined in the Territorial Health Plans 1962-67 will continue, though difficulties in recruitment may hinder full implementation.

Tuberculosis control will follow the usual pattern of mass X-ray surveys, tuberculin skin-testing, B.C.G. vaccination, and follow-up of all contacts.

The review of Public Health Legislation will continue and suggestions for new or amending legislation will be submitted as considered necessary.

WELFARE

Responsibilities Administration of Family Allowances and the Old Age Security Program with the co-operation of the Department of Northern Affairs and National Resources and other agencies. Assistance to elderly, blind, disabled and needy unemployed residents of the north. Assistance to Territorial governments through the Fitness and Amateur Sport Program.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1963 Operations

Family Allowances

In the combined jurisdiction of the Yukon and Northwest Territories a total of \$1, 287, 774 was paid in Family Allowances. At the end of the year there were 6, 088 families with 15, 459 children receiving family allowances.

Old Age Security

A total of \$543, 561 was paid in Old Age Security pensions which were raised to \$75 from \$65 a month as of October 1. In December, 672 persons received pensions.

Social Allowances

Under agreements with the Yukon and the Northwest Territories, the Department of National Health and Welfare pays 50 per cent of the costs to the Territories of Old Age Assistance and Disabled Persons Allowance and 75 per cent of the costs of Blind Persons Allowances. In each case the maximum monthly allowance shareable was \$65. As of December 31 neither Territory had signed an agreement whereby the Federal government would share in monthly allowances of up to \$75. On December 31st, in the Yukon 32 persons were covered under Old Age Assistance, five under Blind Persons Allowances, and six under Disabled Persons Allowances; in the Northwest Territories 143 persons were covered under Old Age Assistance, 47 under Blind Persons Allowances and 30 under Disabled Persons Allowances.

Federal payments to the Territories during the year amounted to \$68, 604 for Old Age Assistance, \$28, 731 for Blind Persons Allowances and \$12, 220 for Disabled Persons Allowances.

Unemployment Assistance

Under the Unemployment Assistance Agreements the Department of National Health and Welfare shares with the Yukon and the Northwest Territories the costs of their social assistance payments.

Since claims may be submitted up to six months after the end of the month to which they relate, complete figures are available, at the time this report is prepared, only up to the end of June. Total payments to the Yukon during the first six months of 1963 amounted to \$31,674 and \$48,308 to the Northwest Territories. The average number of persons assisted during the six months was 314 in the Yukon and 875 in the Northwest Territories. Average monthly payments were \$33.68 for the Yukon and \$18.40 for the Northwest Territories.

Fitness and Amateur Sport

Under the Fitness and Amateur Sport program, federal payments of \$15,057 to the Yukon and \$15,091 to the Northwest Territories were made. In addition grants of \$5,900 were made for approved projects for the Yukon and \$7,290 for the Northwest Territories.

Plans for 1964

For the year 1963-64 funds available for Fitness and Amateur Sport were increased to \$35,468 for the Yukon and \$35,749 for the Northwest Territories and grants to December 31, 1963 were \$15,715 for the Yukon and \$7,211 for the Northwest Territories. For the year 1964-65 funds available under the Fitness and Amateur Sport program are \$40,852 for the Yukon and \$41,308 for the Northwest Territories.

The Territories may amend their agreements with the Federal government in order to participate in increased rates of old age assistance and blind and disabled persons allowances.

NATIONAL RESEARCH COUNCIL

Responsibilities Investigations into various phases of pure and applied sciences in northern Canada.

Long-term Plans

Three Divisions of the National Research Council have a continuing interest in the North.

The Division of Building Research conducts studies of permafrost and northern building problems.

The Division of Pure Physics is concerned with cosmic ray measurements and also has an interest in satellite read-out activities. The Division is active on the Canadian Committee for the International Year of the Quiet Sun which is concerned with coordination activities connected with geomagnetic conjugate point experiments.

The Division of Radio and Electrical Engineering carries out measurement and study of auroral and airglow phenomena with observations planned over the period of sunspot minimum.

Other Divisions of the National Research Council become involved periodically with northern work on a short term basis.

Review of 1963 Operations

Division of Building Research

Increasing interest in northern hydro-electric developments has led to extensive studies of the influence of permafrost on dam construction and the creation of water storage reservoirs.

The field investigations of the influence of a lake on permafrost in the Mackenzie River Delta were described in three papers. These outline the geology and the pattern of permafrost distribution relative to the lake, and compare the observed and calculated ground temperatures beneath and beside the lake.

Ground temperature and dyke movement observations were continued at the Kelsey Generating Station of the Manitoba Hydro on the Nelson River in northern Manitoba to follow the performance of sand fill dykes constructed on permafrost. A drilling program was carried out in April to determine the location of the permafrost table under the dykes and forebay and to compare these results with the ground temperature observations. Good

correlation of the depth of thaw caused by flooding of the reservoir, as measured by these two methods, was obtained.

The study of factors affecting the occurrence and distribution of permafrost at Thompson in northern Manitoba has indicated that certain combinations of vegetation, relief, and drainage characteristics can provide a fairly reliable means of predicting the occurrence of permafrost. Studies of these techniques were extended during the late summer with a field survey of the distribution of permafrost and the physical features affecting its occurrence in northern Saskatchewan and in northwest Manitoba. The areal extent of permafrost bodies, the depth to permafrost and, where possible, its thickness, the type of under-lying mineral soil, and the type of ground ice were related to vegetation and other terrain factors.

The program of study of condensation problems in northern buildings was continued. This involved surveys of temperature, humidity, and moisture accumulations in roofs in selected houses in which venting and construction modifications were incorporated. Technical assistance was provided to other Government Departments in the development of building designs for the north.

Division of Pure Physics

Cosmic ray observations were continued at Resolute to study the changes that occur in the cosmic ray flux in relation to solar activity. Observations were also continued at Churchill with equipment located in the Defence Research Northern Laboratory and operated by D. R. N. L. staff.

An enlargement of the cosmic ray equipment at Churchill was started. This involved a new building for a cooperative project with the Southwest Centre for Advanced Studies and Atomic Energy of Canada Ltd. The project involved the installation of a super neutron monitor of the A. E. C. L. design.

A new cosmic ray station is being established at Inuvik as an addition to the Scientific Research Laboratory established there by the Department of Northern Affairs and National Resources. This involves the installation of a super-neutron monitor and is a joint project with A. E. C. L.

Plans are in hand for a similar super-neutron monitor at Alert or at Resolute if it is impractical to build it at Alert. A similar station is being planned at Goose Bay.

The coordination of several projects at Great Whale River resulted in a recommendation by the Canadian Committee for the International Year of the Quiet Sun for a laboratory building at that station. The objective is taking various geophysical measurements relating to conjugate point (geomagnetic conjugate points) experiments. Great Whale River is closely conjugate to Byrd in Antarctica. Various Canadian and U.S.

research groups will use the building which will be built during the summer of 1964.

Division of Mechanical Engineering

Further studies were undertaken with the air bubbler system around the Department of Public Works wharf and the oceanographic environment at Tuktoyaktuk, N.W.T. Their purpose is to gain an understanding of air bubbler systems in sea water with a view to being able to keep land locked harbours open for shipping.

Plans for 1964

Division of Building Research

Field studies of permafrost and the performance of engineering structures and facilities founded on perennially frozen ground will be continued at Inuvik, Thompson and Kelsey. A further drilling program to obtain information on the distribution of permafrost around other lakes in the upland terrain near Inuvik will be conducted and studies of the distribution of permafrost and the physical features affecting its occurrence will be continued. Interest in the superstructure problems of northern building will be maintained with specific observations of the performance of buildings in which problems occur.

Division of Pure Physics

The cosmic ray stations at Churchill and Resolute will continue and both the enlarged cosmic ray installation at Churchill and the cosmic ray installation at Inuvik will be completed. Cosmic ray stations will be constructed at Goose Bay and Alert, or at Resolute if Alert is too difficult. A small geophysical laboratory will be built at Great Whale River.

Division of Radio and Electrical Engineering

Radar, photographic, and photometric equipment will be installed at Baker Lake and Resolute Bay during the summer for operation from August 1964 to June 1965.

Division of Mechanical Engineering

Work on air bubbler systems at Tuktoyaktuk will be continued. No other specific work is planned but various research and development programs on low temperature operations will continue in the Division's laboratories in Ottawa.

DEPARTMENT OF NATIONAL REVENUE

CUSTOMS AND EXCISE

Responsibilities To administer the Customs and Excise laws and regulations, particularly the Customs control of movement of aircraft and vessels.

Long-term Plans

To increase Customs service in pace with the development of the north.

Review of 1963 Operations

In the Yukon Territory, Whitehorse and Dawson were operated as Customs ports. Sub-offices under Whitehorse were Beaver Creek, Carcross, and Pleasant Camp, B.C. The sub-office of Old Crow was under Dawson.

The regular Customs Office at Frobisher Bay, N.W.T., was operated on a part-time basis by an employee of the Post Office Department, under the jurisdiction of the Port of Ottawa. The Inuvik office was operated on part-time basis by an employee of the Department of Transport, under the jurisdiction of the Port of Edmonton.

At eighteen other points officials of other government departments acted as Customs Officers for the purpose of clearing ships and aircrafts. These were as follows:

Royal Canadian Mounted Police

Baker Lake	Pangnirtung
Cambridge Bay	Pond Inlet
Chesterfield Inlet	Resolute Bay
Coppermine	Sachs Harbour
Eskimo Point	Spence Bay
Lake Harbour	Tuktoyaktuk

Quebec Provincial Police

Fort Chimo, P.Q.

Department of Transport

Alert	Isachsen
Eureka	Mould Bay
Coral Harbour	

Plans for 1964

Normal planning to meet responsibilities.

TAXATION DIVISION

Responsibilities

The administration of the Income Tax and Estate Tax Acts; the assessment and collection of these taxes.

Long-term Plans

Normal planning to meet the requirements of this area in the light of any increases in population.

Review of 1963 Operations

Taxation matters in the Yukon Territory were handled through the District Office at Whitehorse and those of the Northwest Territories through the District Office at Edmonton.

Plans for 1964

The establishment of the Whitehorse Office is a small one of only seven persons and will be at full strength during the year.

Taxation matters in the Northwest Territories are dealt with by periodic visits by members of the Edmonton Office staff to Yellowknife, Watson Lake, Fort Smith and other centres as necessary; this procedure remains unchanged.

NORTHERN AFFAIRS AND NATIONAL RESOURCES

CANADIAN WILDLIFE SERVICE

Responsibilities

Surveys and inventories of wildlife resources; conducting research on wildlife species in relation to their habitat; collection and analysis of animal population and utilization data; recommending management procedures for particular species of economic importance; acting as consultants on fisheries and marine mammals; research, management, and administration of migratory birds under the Migratory Birds Convention Act; co-ordination of federal, provincial, and territorial action on common wildlife problems, including caribou research and management, and wildlife disease studies.

Long-term Plans

To continue the studies of major wildlife resources: to extend research to less-known species; to establish more adequate research facilities in the field; to assess the success achieved in management of wildlife resources to date, and the potential success in this endeavour for the future.

Review of 1963 Operations

Mammalogical Projects

Caribou range studies were continued north of Great Slave Lake in order to assess the extent of forest fire damage and its effect upon plants used as food by caribou in winter.

The wolf study was continued, with special attention being given to the Thelon River drainage. Young wolves were captured and held in captivity to study their biology and behaviour.

Arctic foxes were studied in the Keewatin and Franklin Districts, particularly in the vicinity of Aberdeen Lake. Several young foxes were taken into captivity for studies on food requirements and growth rates.

The distribution, biology, and ecology of polar bears were investigated on Southampton Island and in the vicinity of Victoria and Banks Islands.

A study of the diseases and parasites of northern mammals was undertaken, with special attention being accorded to bison in Wood Buffalo National Park, reindeer near Inuvik, Arctic fox from Cornwallis Island, and beaver from southern Mackenzie District. A second anthrax outbreak in bison north of and in Wood Buffalo National Park received immediate and concentrated attention. Studies of bison were continued in Wood Buffalo National Park and the adjacent part of the Mackenzie District with special reference to population statistics and range conditions. Eighteen wood bison from Wood Buffalo Park were captured and removed to an area north-east of Fort Providence. The animals were given protection from hunting under territorial legislation.

The effect of radioactive fall-out in the north was kept under surveillance, and specimens were collected for analysis. Lichens and sedges on which caribou feed concentrate fall-out and appear to pass radioactive material in this way to the animals, and hence to caribou hunting people.

Ornithological Projects

Studies of breeding waterfowl in the Anderson River Delta and Banks Island were continued in the spring and summer.

A study of the breeding ecology of Ross' geese in the Perry River area was carried out by a student assistant. Other species of waterfowl were banded.

A study of the life history, hunting kill, and utilization of blue and lesser snow geese in James Bay was continued as were aerial surveys of whooping crane breeding areas in Wood Buffalo National Park.

Plans for 1964

Mammalogical Projects

Caribou range studies will be continued and will be extended to include summer range north of Great Slave Lake. The study of wolves will be continued in relation to their effects on caribou and other prey species.

Arctic fox studies will be continued in the Keewatin District, and an attempt will be made to breed animals in captivity to obtain comparative biological information. A preliminary evaluation of Coats Island fox populations will be undertaken.

The study of polar bears in the eastern Arctic will be continued, with special reference to the denning areas on Southampton and Coats Islands.

The caribou management biologist will continue his activities related to hunter education, collection of management information, and caribou tagging. The investigation of caribou physiology will be continued, using captive caribou for laboratory studies.

Yukon big-game studies have been resumed with the re-establishment of a biologist at Whitehorse.

Muskrat, beaver, and mink studies will be continued on an experimental trapping area near Inuvik.

The beaver study in southern Mackenzie District will probably end. Studies of diseases and parasites of northern animals will be continued, with special attention to bison, reindeer, and caribou, as well as foxes, bears, muskrats, and related aquatic fur bearers. Studies of anthrax will be enlarged to determine the effect of the disease on bison and other wildlife.

Investigation of bison ecology and movement will continue in Wood Buffalo National Park, and an attempt will be made to learn more about bison nutrition.

Work on the effect of fall-out in animals in the north will be expanded.

Ornithological Projects

In the continuing study of breeding waterfowl emphasis will be shifted from the Mackenzie Delta and Anderson River Delta to the Old Crow flats. This work will be facilitated by the transfer of the officer in charge to the Inuvik Research Station.

A study of breeding ecology of Ross' geese in the Perry River area will be continued by a student assistant.

The study of the life history, hunting, kill, and utilization of blue and lesser snow geese in James Bay will be continued.

Aerial surveys of whooping crane breeding areas in Wood Buffalo National Park will be continued.

NATIONAL MUSEUM OF CANADA

Responsibilities

Investigations relating to the archaeology, physical anthropology, ethnology, botany, zoology, and vertebrate palaeontology of the north, and the collection, preservation, and display of specimens required for research and public information.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1963 Operations

The Natural History Branch sent two expeditions: one to northern Yukon Territory to study mammal fauna, and the other to the east coast of Hudson Bay to investigate fish and molluscan faunas.

The Human History Branch, Ethnology Section, investigated the ethnology of the Eskimos of Bathurst Inlet, Perry River, and Cambridge Bay, and sponsored a study of the Belcher Island Eskimos. The Archaeology section sent a three-man party on an archaeological survey between Cape Perry and Cambridge Bay, and sponsored a small archaeological salvage task at Button Point, Bylot Island.

Plans for 1964

The Natural History Branch plans two expeditions; continuation of investigation of mammal fauna of northern Yukon, and investigation of fishes of the Polar Continental Shelf.

The Human History Branch, Ethnology Section, will continue studies in Eskimo ethnology in the Bathurst Inlet region. Another ethnological study will be carried out under contract among Indians around Fort Franklin. The Archaeology Section plans further archaeological survey and excavation in the Coronation Gulf area, and is considering supporting a party in the Kazan River area.

NATIONAL PARKS BRANCH

Responsibilities None at present.

Long-term Plans

Select and administer areas which contain representative features worthy of preservation as part of the National Parks System.

Review of 1963 Operations

A preliminary report of the field party from the National Parks Branch which reviewed potential national park sites in the Yukon in 1962 was prepared, and the report of the Recreation Consultant who accompanied them on the economic aspects has been received. To date it has not been possible to formulate a solution which will meet the requirements of a national park and the desire of the mining industry for the broadest possible opportunities for exploration and development. The field party and the consultant who investigated areas in the southern part of the Mackenzie District with a view to the eventual establishment of a national park or parks presented preliminary reports. The consultant's report which includes treatment of the broader economic aspects, was reviewed.

Plans for 1964

There are no plans for specific activities in 1964. However, in future years areas in other parts of the Northwest Territories will be chosen for field investigation to determine their potential as national parks.

NATIONAL HISTORIC SITES DIVISION

Responsibilities

Administration of sites and structures of national historic importance.

Long-term Plans

Study of national history related to the Canadian north in order to select, preserve, and commemorate sites and structures of national historic importance.

Review of 1963 Operations

The Palace Grand Theatre and the Sternwheeler "Keno" in Dawson, Yukon Territory, were maintained and open to the public during the tourist season.

Miss B.A. Johnstone, Superintendent of Lower Fort Garry National Historic Park, was loaned to the Museum of the North, in Yellowknife, to provide technical assistance in completing the museum display for the official opening in the summer of 1963.

Plans for 1964

To continue the survey of sites and structures of national historic interest in the Territories.

THE COUNCIL OF THE NORTHWEST TERRITORIES

Responsibilities To exercise legislative powers comparable to those of a provincial legislature.

Long-term Plans

The enactment of legislation comparable to that of a province and in keeping with changing conditions; gradual evolution toward provincial status with a representative and responsible government.

Review of 1963 Operations

In addition to the customary two sessions of the Council of the Northwest Territories, the first being held at Ottawa in January and the second being divided between Hay River in May and Inuvik in July, a third, special session was held at Ottawa in November.

At the first session, eight bills were passed including one authorizing the Commissioner to grant a telephone franchise at Aklavik, a Main Appropriation Ordinance 1963-64, a Supplementary Appropriation Ordinance No. 2, 1962-63, an Ordinance No. 2, 1962-63, an Ordinance authorizing the Commissioner to enter into an agreement with the Federal Government respecting fitness and amateur sport. Other ordinances covered minor amendments to the Co-operative Associations Ordinance, the Insurance Ordinance, the Low Cost Housing Ordinance, and the Motor Vehicles Ordinance.

Fifteen Sessional Papers were presented to the Council and there were six References for Advice. Council approved a Reference for Advice establishing a program of financial assistance to university students, the choice of the name "Nunassiat" for the proposed new Eastern Territory, the establishment of a Public Utilities Board for the Northwest Territories, the establishment of a fifth constituency for the new Mackenzie Territory, and the disposition of Territorial symbols and appurtenances. The Sessional Papers covered a wide range of affairs of concern to the Territories.

In addition to legislation, sessional papers, and references for advice, Council considered a large number of matters of interest and concern to the population of the Territory.

The second session was unusually lengthy and was called early at Hay River to deal principally with the situation created by the flooding of the communities of Hay River and Fort Simpson. During the session 31

items of legislation were considered of which those of greatest importance concerned relief and financial assistance in respect of the flood and flood damage; an amendment to the Municipal District Ordinance to provide for the establishment of towns or villages; an agreement with the Government of Canada and the Consolidated Mining and Smelting Company of Canada, Limited, respecting the development of the settlement at Pine Point; an agreement respecting the provision of police services for the Territories by the R.C.M. Police; and property taxation applicable outside municipal districts. There were amendments to various other ordinances.

The third session was necessary because Council's term of office expired on November 20th and no provision had been made to hold an election or to provide supplementary appropriations for 1963-64 or any appropriations for 1964-65. The appropriations would usually have been passed at a session the following January but the election of a new Council had not been arranged because there was legislation before Parliament to divide the Northwest Territories into two new territories, Mackenzie in the west and Nunassiat in the east, and this legislation would also extend the life of Council or revive Council to serve until elections could be held in the new Territory of Mackenzie. Contrary to expectations, the Bills were not passed by early fall thus leaving the Government of the Territories with a situation where there was no Council and no funds to start the new fiscal year.

The special session recommended to the Commissioner that an election be called for March 31, 1964 and passed supplementary appropriations for 1963-64 and interim appropriations for the first six months of 1964-65. This session also passed on Ordinance amending the Game Ordinance, creating a bison sanctuary at the west end of Great Slave Lake and authorizing the holders of General Hunting Permits to shoot grizzly bear at any time of the year; and an Ordinance establishing an apprentice training program.

At year-end the legislation to divide the Territories had still not been passed by Parliament; it had been referred to the Standing Committee on Mines, Forests and Waters and was still before that Committee.

Work on caribou conservation continued with the gathering of information on herd size, movements, distribution and human usage.

There was a substantial increase in the number of beaver, marten, mink, weasel, and wolf taken. The take of all species of fox declined sharply as did lynx, muskrat, squirrel, and wolverine. The catch of fisher and otter remained about the same. The value of furs taken during 1962-63 was estimated at \$846, 422 compared to \$937, 654 in 1961-62. The decrease reflects price fluctuations and the lower take of some species.

General

Much of Council's attention was directed toward the expected division

of the Territories and the financial and other arrangements that would have to be made between the expiring Northwest Territories and the two new Territories. In addition, Council was extremely concerned with the lack of employment particularly as it affected young people, welfare generally, and the population explosion being experienced in the Territories. Council registered its disappointment that the federal legislation to divide the Territories had not been passed before Council's term expired. Resource development programs instituted by the Department of Northern Affairs and National Resources received considerable favourable comment along with suggestions for improvement and extension. A pilot survey of the possibility of establishing co-operatives in the Fort Resolute area was undertaken and approval in principle was given for a contract with the Co-operative Union of Canada for the services of a Co-operative Officer to assist the establishment of co-operative ventures in this area. Council also received briefs on behalf of the Separate School Boards at Hay River and Yellowknife requesting a greater share of business corporation taxes.

The Territorial Government continued to participate financially with the Federal Government in such public services as the cost of education, health, road construction, justice, and other matters handled by the Federal Government which are either wholly or partly the responsibility of the Territorial Government. Participation was on the basis recommended in the Report of the Interdepartmental Committee on Federal-Territorial Financial Relations, 1962, as approved by the two governments.

On July 12th, Mr. R.G. Robertson relinquished the post of Commissioner of the Northwest Territories on his appointment as Clerk of the Privy Council. He was succeeded by Mr. B.G. Sivertz, formerly Director, Northern Administration Branch, Department of Northern Affairs and National Resources.

Plans for 1964

The Territorial Government will continue to administer the affairs of the Territory as it has in the past until and unless there is a change in the relevant federal legislation. Council will be requested to authorize the Commissioner to enter into an agreement with the Co-operative Union of Canada for the development of co-operative enterprises in the Great Slave Lake area over the next three years.

Plans are being formulated for a major caribou survey to be conducted in 1964-65 in the triangle formed by Bathurst Inlet, Great Bear Lake, and Great Slave Lake.

An analysis of reports received following a game survey carried out in the Mackenzie Mountains during the summer of 1963 indicated that non-resident big game hunting could be permitted in this area. Enabling legislation will be presented at the next session of the Council.

COUNCIL OF THE YUKON TERRITORY

Responsibilities To exercise legislative powers comparable to those of a provincial legislature.

Long-term Plans

Enactment of legislation comparable to that of the provinces and in keeping with changing conditions: gradual evolution toward provincial status.

Review of 1963 Operations

The Council was called for two sessions. The first from March 25 to May 7, and the second from November 4 to 22. During the first session sixteen ordinances were passed, the most important of which were ordinances respecting securities registration and superannuation for Territorial employees (the latter to take effect 1 April, 1964).

The second session dealt with fifteen ordinances of which the most important were Recording of Evidence by Sound Apparatus, Wages Recovery, Fair Practices, and an amendment to the Medical Profession Ordinance.

The Territorial Council Financial Advisory Committee visited Ottawa in the fall to discuss matters concerning the Territory.

ADMINISTRATION OF THE YUKON TERRITORY

Responsibilities To administer the Ordinances of the Yukon and carry out the responsibilities of the Department of Northern Affairs and National Resources in the Territory except those relating to Water Resources.

Long-term Plans

Economic and industrial development to the point where increased population and revenues resulting therefrom would warrant full provincial status.

Review of 1963 Operations

Territorial Secretary

During the year the Territorial Secretary issued 317 licences under the Business Licence Ordinance, 27 under the Insurance Ordinance, and 12 under the Motion Picture Ordinance. Under the Motor Vehicle Ordinance and the Bill of Sale Ordinance, 13,795 licences were issued, and 176 Boiler

Boiler Inspection Certificates were issued. The office recorded 501 births, 90 deaths, and 93 marriages in the calendar year 1963 - a slight decline from the 531 births, 101 deaths and 111 marriages in the fiscal year 1962-63. The total tax assessment 1 April, 1963 to 31 March, 1964 was \$5, 600, 000 and the total tax imposed approximately \$202, 000. Forty-five complaints under the Labour Provisions Ordinance were dealt with. In two cases it was necessary to take court action.

Legal Adviser

The Legal Adviser was appointed in June, 1962. His responsibilities include advising the Commissioner and the Administration, drafting and approval of necessary documents. He also holds the federal appointment of Registrar of Land Titles, and the territorial appointments of Registrar of Joint Stock Companies, Registrar of Corporation Securities, and Public Administrator. Instructions for 31 Bills were drafted or prepared and were reviewed by the Territorial Council during the two sessions. He also served on a Corrections Committee charged with improving custodial facilities and rehabilitation in the Yukon. His attendance at the Conference on Uniformity of Legislation marked wider recognition of the emerging status of the Yukon, and his appointment as a member of a three man Committee on Uniform Company Law marks recognition of the calibre of the officers who serve Northern Administration.

The number of companies registered at January 31, 1964, was 435 with 59 new companies registered in 1963 as compared to 51 in 1962. Societies registered numbered 6 as compared to 8 in 1962, and totalled 60 on January 31, 1964.

Territorial Department of Education

Enrolment in Yukon schools has risen to 3, 147 students with 147 teachers. In 1962 there were 2, 970 students and 135 teachers. More boys desired to take "shop" classes than facilities could accommodate.

A part-time Director of Night Classes was appointed to co-ordinate and direct a mixed program of academic, vocational and interest courses.

The Whitehorse Vocational Training School was officially opened by Commissioner G.R. Cameron on June 11 and classes began with a small pilot body of students. Following the main enrolment on September 3, the student body reached 100 with 12 courses running at full or near-full capacity. Of the 100 students, 32 are of Indian status - 25 of these are in residence.

A night school program was instituted for upgrading purposes offering welding, plumbing, cabinet work, and steam engineering.

Territorial Department of Public Works

Responsibilities include summer maintenance of 936 miles and winter maintenance of 650 miles of roads and streets; year-round maintenance of 98 territorial owned buildings and 82 federal buildings; design and supervision of all territorial and some federal building construction; consulting services for all territorial departments in engineering matters.

Road construction was carried out on sections of the Whitehorse-Keno road, Stuart-Crossing-Dawson boundary road, Canol Road, Two-Mile Hill, Whitehorse, and Dempster Highways at a cost of approximately \$525,000. Building construction amounted to approximately \$1,450,000 and included schoolroom additions to Porter Creek, Watson Lake Elementary High, Mayo, Carmacks, Dawson, and Old Crow Schools. New schools at Haines Junction, Teslin and a separate school in Watson Lake were approximately 90% completed. New grader stations on the Dempster Highway and Watson Lake-Ross River roads, a new teacherage in Dawson City, various building renovations, conversions and numerous minor projects were completed. Road and building maintenance amounted to approximately \$835,000.

Forestry

The forest fire season was one of the lightest on record with 44 fires burning a total of approximately 11,680 acres. Firefighting costs totalled about \$34,000 and capital maintenance and other costs were \$325,500. Timber production increased to approximately 8,000,000 board feet, and log scaling was adopted throughout the Territory. Look-out towers were constructed at Dawson and Tagish.

Mining

Mining in the Territory increased in value over the previous year. Mineral production was \$14,625,150 (preliminary figures Dominion Bureau of Statistics), representing an increase of nearly \$1.5 million owing primarily to higher prices for base metals and silver.

Mining exploration was carried out in all mineralized areas of the Yukon. Mining development programs were carried on by the following companies: United Keno Hill Mines Ltd. and Peso Silver Mines Ltd., both in the Mayo mining district; Cassiar Asbestos' Clinton Creek property near Dawson; Crest Exploration's iron ore find in the Snake River region; Ormsby Mines Limited in the Whitehorse Copper Belt. Other areas in which interest was shown were Montana Mountain, Van Gorda Creek and Mayo.

Placer mining was continued by the Yukon Consolidated Gold Corporation and numerous smaller operators, and remains one of the largest industries of the Territory.

Oil and gas exploration continued in the southeastern corner of the Yukon and in the Peel Plateau area north of Dawson. Companies involved in exploration drilling were Pan American Drilling, Canada Southern and Socony Mobil.

Oil rig safety inspections, mine safety inspections, both placer and hard rock, and coal operation inspections were conducted and safety inspections begun under the Workmen's Compensation Safety Regulations. Mining claim inspections and investigations were made in order to assist in the administration of mineral rights. There were 2,728 quartz claims recorded in the four mining districts with the Whitehorse district most active. Only 96 placer claims were recorded. At the end of the year the four Mining Recorders were carrying 7,643 quartz claims and 1,329 placer claims. The Mayo mining district had the largest number of active quartz claims and Dawson mining district over 1,000 placer claims in good standing.

The Prospectors Assistance Program was active for the second year and three prospecting teams claimed financial assistance. The Central Records Office began supplying information to prospectors, companies and Government officials.

Office of the Supervisor of Lands

This office had an active year processing land applications from the four land districts. Two teams of Dominion land surveyors are active in the summer months and they have reduced the number of outstanding legal surveys.

Central Mortgage and Housing Corporation has completed its surveys on Whitehorse, Watson Lake and Haines Junction. The land problems at Watson Lake have decreased due to the opening of a Land Agent's office at that centre, coupled with a slight recession in mining there.

Territorial Department of Travel & Publicity

Tourist travel increased approximately 18% over the 1962 volume producing two and a quarter million dollars during the summer season. The introduction of daily service by the Alaska Ferry System between Prince Rupert, B.C. and Skagway, Alaska, had a strong influence on travel volume and travel patterns in the Yukon.

Direct mail inquiries received by the Department of Travel and Publicity numbered 17,525, an increase of one hundred eleven per cent over the previous year.

Territorial Department of
Housing and Area Development

This small Department had an active year in assisting committee throughout the Yukon in all municipal matters. The Low Cost Housing Loans came into effect in April. First mortgage loans totalling \$69,000 were approved and the total of first mortgage loan applications pending is \$30,500. Some progress was made with the Squatter Removal Program.

The Central Mortgage and Housing Corporation completed their recommendations for the planning of the Whitehorse Metropolitan area. Work is under way to implement their recommendations.

Territorial Department of Welfare

In addition to the administration of a complete public welfare program in the Yukon, this Department has assumed responsibilities for:

- (a) The operation of a new Senior Citizens' Home.
- (b) The operation of a Nursing Home.
- (c) The planning for the organization and development of a Correctional Program.

The Senior Citizens' Home in Whitehorse was opened in November and provides twenty individual, self-contained living units for aged pensioners able to care for themselves. This Department assumed responsibility for the administration and operation of St. Mary's Home for the aged and the hospital building in Dawson City following the departure of the Sisters of St. Ann in August.

As a result of a motion of Territorial Council a Corrections Committee was formed to plan the development of a Custodial and Correctional Program for the Yukon. This program will come under the jurisdiction of the Department of Welfare.

Regional Library

Two important changes took place in the year under review.

- (1) The Whitehorse Public Library sponsored by the I.O.D.E. became officially the Whitehorse Branch of the Yukon Regional Library administered and financed entirely by the Regional Library.
- (2) The Regional Library, with the co-operation of the Department of Education, undertook to give library service to sixteen rural schools in the Territory.

Five new deposit stations were established bringing the total of library outlets to five permanent branches, two associate libraries and sixteen deposit stations. Approximately 10,000 books were processed and 13,000 circulated to community libraries, school libraries and individual borrowers in isolated areas.

Liquor Department

Legislation related to the control of alcoholic beverages was amended to permit the native population equal rights in liquor purchases and consumption. The native population is adapting to this new privilege very well.

Total gross sales for the months of April 1, 1963 to January 31, 1964, amounted to \$2,050,458 as compared to \$2,092,884 for the previous corresponding period, a decrease of \$42,426.

The Liquor Department was responsible for the preparation of licences for all liquor outlets in the Yukon. This was previously done through the office of the Territorial Secretary.

Public Health

The Ross River Health Station was completed and in use. Monthly visits were made by nurses and physicians from Whitehorse. St. Mary's Hospital at Dawson City was taken over by the Territorial Government from the Sisters of St. Ann. Renovations were begun to allow operation under one roof of a fifteen-bed nursing home and a twelve-bed treatment hospital. Eight chronic care beds were set up in Whitehorse General Hospital. At present these are the only chronic care beds available in the Yukon.

A pilot project for school dental services was begun in Whitehorse providing examination, prophylaxis and treatment services for all Grade 1 students.

A visit was made by a team from the Alberta Child Guidance Clinic to assess children referred by physicians, teachers and nurses.

A visit was made by a team from the Alcoholic Foundation of Alberta to assess the need for a program of prevention and treatment of alcoholism and undisciplined drinking in the Yukon Territory.

Territorial Department of Game

One-hundred seventy eight non-residents hunted in the Territory. Of these 159 were aliens, 16 Canadians and 3 Spring bear.

Under the Predator Control Program 82 wolves were taken on poison baits.

Patrols were conducted in co-operation with the R.C.M. Police and the Yukon Forestry Service. Inspections were made of outfitters' equipment, and their base camps were visited.

Inquiries concerning Yukon Hunting Regulations, outfitters, etc. increased considerably, especially from European hunters.

Trap line registrations and re-registrations greatly increased due to the higher prices paid for furs in the past seasons.

Department of the Territorial Treasurer

The Territorial Treasurer is responsible for the administration of the Financial Administration Ordinance, the Taxation Ordinance, the Amusement Tax Ordinance, the Hospital Insurance Ordinance, the Municipal Ordinance, the Public Service Ordinance, etc. Long term plans of this department comprise the expansion of services based upon the needs of the Territory. Financial requirements will be met by an increase in revenue and by monies obtained from the Federal Government under various agreements of which the Federal Territorial Financial Relations Agreement is the most important.

Estimated Current Deficit Position

as at 31st March, 1964

Balance Current Deficit as at 1st April, 1963 \$ 1,417,720.00

Add: Estimated excess of budgetary expenditure over
budgetary revenue 1963-1964.

Operation and Maintenance:

Estimated expenditures	\$ 5,766,451.00
Less estimated net unexpended balance	<u>550,000.00</u>
	5,216,451.00

Deduct:

Operating revenue	\$ 4,129,003.00
Less non-budgetary receipts	<u>19,165.00</u>
	4,109,838.00
Deficit Grant	<u>1,609,131.00</u>

Operation and Maintenance projects financed
100% by the Federal Government under the
Engineering Services Agreement

Estimated expenditure	80, 500.00	
Estimated recoveries	<u>80, 500.00</u>	Nil

Loan Amortization:

Estimated expenditure	433, 186.00
Less non-budgetary disbursements	<u>167, 384.00</u>
	265, 802.00

Deduct:

Amortization re- coveries	117, 249.00		
Less non-budgetary receipts	<u>23, 284.00</u>		
	93, 965.00		
Loan amortization grant	<u>315, 937.00</u>	<u>409, 902.00</u>	144, 100.00

Project and Loan Capital:

Estimated expenditure	2, 682, 179.00
Less estimated net unexpended balance	300, 000.00
Non-budgetary dis- bursements	<u>240, 000.00</u>
	<u>540, 000.00</u>
	2, 142, 179.00

Deduct Capital Recoveries	863, 307.00	
Less non-budgetary receipts	<u>200, 000.00</u>	<u>663, 307.00</u> 1, 478, 872.00

Capital Projects Financed 100% by the Federal
Government under Engineering Services Agreement

Estimated expenditure	752, 250.00		
Estimated recoveries	<u>752, 250.00</u>	<u>nil</u>	<u>832, 254.00</u>

Balance Estimated Current Deficit as at 31st March, 1964 2, 249, 974.00

Plans for 1964

Legal Adviser

It is expected that a Senior Legal Adviser will be appointed.

Education

A major change in the switch from the lock-step grade system to a unit promotion system for grades one to four. This will be extended to include grades 5 to 7 in 1965.

A good deal of importance is attached to vocational training in the Yukon and further development of day and night classes is anticipated.

Public Works

A road and building maintenance program in the amount of approximately \$1,035,000, re-construction of sections of Whitehorse-Keno and Canol roads in the amount of approximately \$500,000, and building construction valued at about \$323,400 are planned. Continuation of the Watson Lake-Ross River Road is also proposed.

Look-out towers are planned for Haines Junction and Carmacks.

Welfare

In the initial step toward the development of a Correctional Program, a professionally trained Probation Officer will be employed in April, 1964.

It is expected that construction of the new Territorial jail will commence. The Custodial and Corrections Program will include in addition to the construction and operation of the jail, the operation of minimum security mobile camps, a rehabilitation training program, probation and parole services, follow-up services and counselling.

A new district welfare office will be opened in Watson Lake.

Territorial Treasurer

Estimated Current Deficit Position as at
31st March, 1965

Balance Deficit as at March 31st, 1964 - Brought Forward \$2, 249, 974.00

Add: Estimated excess of Budgetary Expenditure over
Budgetary Revenue 1964-1965.

Operation and Maintenance

Estimated Expenditure \$6, 348, 475.00

Deduct:

Operating revenue \$4, 530, 991.00

Less non Budgetary
receipts 19, 926.00
4, 511, 065.00

Deficit Grant 1, 868, 013.00 6, 379, 078.00 \$30, 603.00

Operating and Maintenance projects financed
100% by the Federal Government under the
Engineering Services Agreement

Estimated expendi-

ture 65, 800.00

Estimated re-
coveries 65, 800.00 Nil

Loan Amortization

Estimates expenditure 560, 595.00

Less non Budgetary Disbursements 236, 547.00
324, 048.00

Deduct:

Amortization re-
coveries 126, 958.00

Less non Budgetary
receipts 27, 433.00
99, 525.00

Loan Amortization

Grant 433, 636.00 533, 161.00 209, 113.00

Project and Loan Capital

Estimated expenditure	1, 572, 330.00
Less non Budgetary Disbursements	<u>270, 000.00</u>
	1, 302, 330.00

Deduct:

Capital Recoveries	683, 629.00	
Less non Budgetary receipts	<u>230, 000.00</u>	<u>453, 629.00</u>
		848, 701.00

Capital Projects Financed 100% by the Federal Government under Engineering Services Agreement

Estimated expenditure	530, 700.00		
Estimated recoveries	530, 700.00	<u>Nil</u>	<u>608, 985.00</u>

Balance Estimated Current Deficit as at 31st March, 1965 2, 858, 959.00

Current Deficit Financed by:

Whitehorse Hospital Loan	750, 000.00
General Purposes Loan	500, 000.00
Capital Purposes Loan 1962-63	2, 833, 000.00
Capital Purposes Loan 1963-64	796, 000.00
Capital Purposes Loan 1964-65	<u>930, 000.00</u>
	<u><u>5, 779, 000.00</u></u>

NORTHERN ADMINISTRATION BRANCH

Responsibilities The Headquarters in Ottawa has seven Divisions which carry out the staff, advisory, planning, and co-ordinating functions connected with the implementation of departmental policies affecting all matters falling within the jurisdiction of the Branch.

Administration Division

Finances, staff recruitment and management, procurement of supplies administrative procedures, and administration of low cost housing programs in the north.

Engineering Division

The construction and maintenance of roads, buildings, and utilities in the Northwest Territories and the operation of power plants, sewer and water services, heating plants, and other electrical and mechanical equipment. Engineering assistance for community planning. Supervision of the financing and progress of the Roads to Resources program.

Education Division

Operation of a school system for all the children of the Northwest Territories (outside the organized School Districts in Yellowknife and Hay River) and the Eskimos of Arctic Quebec. Vocational education, and adult education in these areas. In Yellowknife, operation of a hostel and a combined vocational high school. Responsibility for other hostels in the Territories, which are operated under contract by the Roman Catholic and Anglican Missions.

Industrial Division

Improvement of economic conditions by encouraging better harvesting of food resources, developing cottage industries and co-operatives, and enabling Eskimos to build their own houses at low cost. Area surveys of renewable resources on which to base projects.

Resources Division

Administration of Crown-owned mineral rights, oil and gas, forests and lands in the Yukon and the Northwest Territories and certain Crown-owned lands for which the Federal Government is responsible in the provinces.

Territorial Division

Provision of the secretariat of the Government of the Northwest Territories; acting for the Government on the negotiation of federal-territorial financial arrangements; the administration of the Territorial Ordinances; provision of advisory services on Yukon Affairs; specific activities of the N. W. T. including game management, hospital insurance, labour, municipal affairs, and liquor management.

Welfare Division

Provision of welfare services to all residents of the Northwest Territories other than Registered Indians on behalf of the Federal and Territorial Governments and to the Eskimos of Arctic Quebec and Manitoba. Operation of rehabilitation centres at Frobisher Bay and Inuvik, and transit centres at various points throughout the north. Participation in community development and provision of advice on Yukon Welfare matters as required.

Field Organization

The directorate retains line control of the entire field organization. The headquarters divisions advise the Directorate in their areas of responsibility and in these areas exercise line responsibility for the activities of members of the field organization and are the channel to and from the field for technical matters.

The Northwest Territories is divided into two districts, the Mackenzie District with headquarters at Fort Smith. It has three regional offices and eight Areas. The Arctic District has headquarters in Ottawa and is made up of three regions and fifteen Areas. The review of 1963 operations and plans for 1964 are described separately under each district except for the Resources Division.

Long-term Plans

The Branch's aims are basically directed toward encouraging growth and progress in those areas for which it has responsibility.

Two processes operate to produce a continually changing situation in the Branch administrative organization.

- (1) Decentralization - the continuing transfer of authority and responsibility from Headquarters to District offices where they may be decentralized further to Regional offices.

- (2) The development of independent status on the part of the Northwest Territories. The Branch has a dual role of providing administration for a series of transitional stages towards self government on the part of the Territories; and of establishing an orderly, efficient, and appropriate system of administration which can be taken over gradually by the developing Territorial governments.

Education

The rate of school construction is being accelerated to provide by 1968, basic academic and vocational school facilities for all of the then school-age inhabitants of the north.

Vocational, technical, and university programs are being expanded by placing greater emphasis on apprentice and trade training, pre-training, University education and training, employment placements, and guidance services.

Education beyond the high school level is being encouraged by a plan of financial assistance in the form of grants and loans to assist students to attend university.

A vigorous program of adult education in a few major communities is being planned, which will be oriented towards the improvement of living in the home and community. Where the conditions warrant, emphasis will be placed upon living in a wage economy. In all cases the appreciation of, and the development of, good citizenship will be stressed. The work will be conducted by professional adult educators with the help of volunteers and interested agencies.

Engineering

It is proposed to meet the requirements of the Department of Northern Affairs and National Resources by providing more economical, aesthetic, and functional structures, and by construction of roads to permit easy access to the natural resources in the north. The provision of a field engineering staff in the Northwest Territories that can eventually form the basis of a territorial-engineering staff, and the provision of town plans for northern settlements are other objectives of the division.

Industrial

The economic status of the local peoples will be improved by area planning studies, improved harvesting of food resources, development of cottage-type industries, low-cost housing, and co-operative enterprises. This involves assessment of available resources and preparing integrated plans for the development and marketing of these resources.

Additionally the possibilities of establishing small businesses and industries will be assessed, including tourist development, and, where feasible, encouraged in their development. This involves market research and development in relation to the foods and goods which can be produced for marketing both in the Territories and in the south.

Work will continue on a new housing policy for the north in an endeavour to establish common standards of construction, financing, size, etc. between houses built by the Department of Northern Affairs, the Department of Citizenship and Immigration, and the Territorial Council.

Experimental work was carried out in several Arctic areas to determine the feasibility of using mechanical transport to increase the range of trappers' activity. Continued study will be made of this matter and close liaison will be maintained with manufacturers to see if improvements can be implemented.

A new longliner equipped with a power gurdy was built in Prince Edward Island and shipped to Port Burwell in the N.W.T. This vessel will be used to do some exploratory work to determine if commercial quantities of halibut can be taken in Hudson Straits and off the northern coast of Labrador.

Resources

To promote the optimum development of available resources, developing them as rapidly as possible while protecting the public interest. Specific objectives are:

- (a) to accumulate and correlate information on northern resources and to prepare a total inventory of them as a basis for promoting their development.
- (b) to devise detailed policies for the disposition of oil, gas, placer and hard rock minerals, timber, and land, which will promote active development, and at the same time assure sound management of the resources and protect the public interest.
- (c) to develop an administrative organization that will give efficient service to those taking part in northern resources development.
- (d) to work closely with other agencies engaged in northern development, to assist them in planning communities, transportation routes, and other services in relation to existing and potential resource development.

Welfare

The three main objectives are:

- (1) to introduce in the north suitable programs of social security, public assistance, and related services for family and child welfare, especially for those classes of individuals who are in need of care and protection.
- (2) to assist in the provision of services designed to prepare people starting from primitive conditions of life for economic and social changes, to foster interim conditions of self-sufficiency pending the advent of more suitable economic conditions, and to promote attitudes of self-reliance.
- (3) to make possible the collaboration of public and private organizations, to encourage the efforts of voluntary agencies, and especially to foster citizen participation and initiative at the local level.

It is proposed to accomplish these objectives by:

- (a) Filling the vacancies that exist in the Social Worker positions in the Welfare Division and in the field.
- (b) Construction or improving facilities in some areas of the north for the care of children, the aged, rehabilitants and offenders.
- (c) Making available more low-cost housing for all families and better accommodation for young single people in the north.
- (d) Undertaking a training program which will make it possible for local people to carry out a wide range of government responsibilities, including aspects of the welfare program.
- (e) Placing greater emphasis on local participation in solving problems and generally in managing their own affairs.
- (f) Developing closer liaison among Divisions, Branches and Departments of Government and non-Government agencies in the north and in the south for the purpose of uncovering and creating more employment and self-help opportunities for northern Canadians.
- (g) Pursuing the matter of integrating and unifying government activities directed towards the improvement of the physical, social and economic conditions of the three ethnic groups in the north.

REVIEW OF 1963 OPERATIONS

Office of the Administrator of the Arctic

Organization

Three Regional Headquarters were maintained. The headquarters at Churchill, Manitoba, supervised area offices at Rankin Inlet, Coral Harbour, Eskimo Point, Whale Cove and Baker Lake. The Regional office at Frobisher Bay supervised area offices at Cape Dorset, Igloodik, Hall Lake, Pangnirtung and Pond Inlet. A Regional headquarters for Arctic Quebec was maintained at Ottawa, supervising area offices at Great Whale River, Port Harrison, Povungnituk, Sugluk and Fort Chimo.

The Arctic District Office is made up of seven sections; Education, Engineering, Welfare, Industrial, Personnel, Financial Administration and Property, Building and Equipment.

Economy of the District

Throughout the year permanent wage employment remained reasonably constant although at a relatively low level. Employment on the DEW Line decreased slightly due to the closing of several "I" sites. An exodus of Eskimo miners formerly employed in the nickel mine at Rankin Inlet began late in the year. Employment was offered to many of these men in Arctic Quebec, the Mackenzie District and in northern Manitoba.

Efforts continued towards the development of local resources which would provide a source of income alternative to wage employment. Commercial fisheries were operated in the Ungava area at Richmond Gulf and at Frobisher Bay. Logging projects were continued in the Ungava area. The production of art work and handicrafts continued in many communities: most significantly at Cape Dorset, Povungnituk, Great Whale River and Baker Lake.

The number of Arctic fox trapped increased over the previous year while the number of sealskins produced, - spurred by a greatly increased price, - moved up substantially.

Education

Eighty-five elementary classrooms, one high school classroom and nine special classrooms in homemaking and industrial arts were in operation in 29 schools accommodating a total enrolment of 1,873 students comprised of 1,718 Eskimos, 36 Indians and 119 others. In addition, a teacher was hired from the months of June to August to conduct a summer school at various camps in the Port Burwell area. In many settlements where the schools recessed at the end of June for the summer holidays, many of our teachers left the settlements and went out to camp sites to give teaching

instruction to camp children.

During the year adult education programs were carried out by many of our teachers in the evenings. Such instruction covering homemaking, child care, English, sewing, handicrafts, music, etc. Specialists have also been hired under contract to give instruction in various fields depending on the need and requirements of a particular settlement.

In the Vocational Training Program a total of 151 Eskimos received some form of training in the following categories during the year: power plant operating, outboard motor mechanics, carpentry, heavy equipment operating, plumbing, sawmill operating, hairdressing, classroom assistants, clerical, etc.

An in-service orientation course was conducted in August for newly recruited teaching staff and, in addition, teachers' workshops were held early in the year at Churchill, Frobisher and Great Whale River to enable teachers to study various problems and improve teaching methods.

Engineering

This year construction crews were engaged on building and maintenance work in 29 settlements. The largest centre of activity was Pond Inlet where the construction crew undertook and completed the erection of one 2-bay heated garage, a 2-classroom school, two 8-pupil hostels, a walk-in freezer, a 2-bedroom house and much maintenance work on existing buildings. An experimental recirculating sewage system has been installed in the new three classroom school constructed at Cape Dorset and is now working satisfactorily.

A variety of new buildings was included in the Arctic District construction program. There were five heated warehouses, nine houses, four schools and a 3-classroom annex to one of the school complexes. There were also six 2-bay heated garages, two warehouse workshops, three walk-in freezers, three hostels, five combined office and transient quarters and several other minor structures.

As a result of several meetings between Engineering Division and the Arctic District Engineering Section, it was agreed that the growing number of departmental freezers in the north warranted special attention. A consulting engineering firm, J. Klassen and Associates Limited, was retained to set up a program for improving and renovating 22 walk-in freezers.

To meet the increased demands for electricity throughout the District, 13 new diesel generators were purchased with a total generating capacity of 830 K.W. By far the largest, a new 150 K.W. diesel generator, was installed at Fort Chimo. A new power plant, complete with power distri-

bution system was installed at Arctic Bay. New powerline and powerline extensions sprang up in 10 other settlements. A major repair and preventive maintenace program in six settlements in Arctic Quebec resulted in the overhaul and rebuilding of 16 diesel generators by two factory trained mechanics. Higher standard wiring and modern fluoresent lighting were installed in four older type school buildings. Mercury and high output fluoresent street lighting was mounted along the new distribution system at Payne Bay, Churchill, Povungnituk, Pond Inlet and Great Whale River. For the dark days in the Arctic, floodlighting was mounted on poles around the school play yards at several sites.

An engineering highlight this year was the erection and completion of 10 bulk oil storage tanks, one each at Pond Inlet, Sugluk, Whale Cove, and Eskimo Point, and two each at Igloolik, Cape Dorset and Pangnirtung. We have now taken a long step toward providing bulk oil and its cost advantage to most of the settlements in the Arctic District.

Five Nodwell fully-tracked transports and trailers were purchased this year to provide better water and sanitation services for small settlements which have to date had little or no mechanical equipment for this work. Three of these are now in operation and their performance will be closely watched for future planning. At Frobisher Bay when the U.S.A.F. was preparing to leave, several service vehicles were purchased from them. These will enable our Department to undertake the greatly increased responsibilities for the provision of essential services in that settlement. Elsewhere, three small Crawler tractors, five bombardiers and a few new trucks should enable Administrators and technical personnel to provide better service and communication.

Water and sewerage investigations were carried out at Pond Inlet, Pangnirtung, Cape Dorset, Port Burwell and Holman Island.

At the request of this Department, radio beacons were installed at Cape Dorset, Eskimo Point and Rankin Inlet by the Department of Transport.

A small fish canning plant was designed and shipped to northern Keewatin. The plant will be set up in the Daly Bay area and will process an annual production of approximately 20 to 25 thousand pounds. This will be the first commercial char canning plant put into operation in the Arctic.

Industrial

Eskimos participated in catching, processing and freezing fish for shipment to southern Canada at the following locations: Leaf Bay and Koksoak Rivers (Arctic char and salmon), and George River and Payne Bay (Arctic char) in the Ungava area; Richmond Gulf (sea troute and white fish); and Port Burwell (Arctic char and cod). At Frobisher Bay Arctic Char and

cod were caught and sold locally. Arts and handicraft projects continued at the following locations: Cape Dorset and Povungnituk (carvings and handicrafts), Great Whale River (carvings, sealskin hats and other handicrafts), Port Harrison (dolls and sealskin toys), Fort Chimo and Port Burwell (model kayaks and implements, sealskin and other sewn handicrafts), Baker Lake, Rankin Inlet and Sugluk (carvings and handicrafts). Contract arts and crafts specialists were sent to Baker Lake and Rankin Inlet to work with the people in an effort to encourage new craft forms and diversify present production. Experiments in ceramic art are being carried out at Rankin Inlet under the supervision of a full time Craft Development Officer.

The west Baffin Eskimo Co-operative continued to produce sealskin and stone cut prints and in 1963 the first of a series of engravings and etchings were available for a sale. A substantial number of stone cut prints were also offered for sale by the Povungnituk Co-operative. The value of print production was estimated at \$90,000. The Canadian Eskimo Art Committee continued to provide advice and guidance to Eskimo Co-operatives engaged in arts and crafts production.

The logging and milling operations at Geog River and Fort Chimo produced lumber required for construction of local departmental buildings and Eskimo housing. The Frobisher Bay Eskimo Housing Co-operatives established in 1961 and 1962 constructed 13 houses in 1963. Twenty-two houses for these Co-operatives remain to be delivered. The canoe building project at Great Whale River produced 10 canoes, five of which were sold to outside agencies and three made available for departmental use. The sealing project at Port Burwell was less of a success than in previous years owing to an early freeze-up. Trapping projects in the Keewatin were carried out again but on a reduced scale of assistance to the trappers.

Welfare

The Welfare Section of the Arctic District Office continued to operate with five social workers under the supervision of the Welfare Superintendent. The Frobisher Bay Regional Superintendent of Welfare transferred to a position in the Welfare Division. The Area Social Worker for Fort Smith was borrowed to fill this position until a permanent replacement could be found. The Area Social Worker from Frobisher Bay transferred to Ottawa leaving this position vacant in Frobisher.

The Regional Superintendent of Welfare for Keewatin continued his duties with limited help as no replacement was found for the Churchill Area Social Worker.

The Welfare services for Arctic Quebec continued to be supervised by the welfare staff of the Arctic District Office with the operational duties being performed by the Northern Administrators and teachers.

The Infants' Creche and Children's Receiving Home at Churchill continued to care for children temporarily separated from their parents because of illness and other reasons. The Transient Centre and Children's Receiving Home at Frobisher Bay continued their services to transients and children. A number of expectant mothers were provided with pre-natal and post-natal care in the Churchill Maternity Home.

The Rehabilitation Centre at Frobisher Bay continued to operate without replacements for the staff lost in 1962, except that a handicraft instructor was hired on contract. The rehabilitation program had to be curtailed to some degree because of the shortage of staff. An average of 125 persons are resident at the centre with about 50 receiving full services.

The Arctic District Office continued to exercise responsibility for the repatriation of all Eskimo patients discharged from southern hospitals. This program ran fairly smoothly in spite of changes in agents at Winnipeg and Moose Factory. It did, however, demand a considerable amount of staff time which resulted in a decrease in time spent on other essential services.

Transit facilities intended primarily to provide temporary accommodation for patients en route to or from hospital were in operation at Fort Chimo, Frobisher Bay and Churchill, handling approximately 386 transients.

Provision was made in 1963-64 estimates to erect forty prefabricated houses for families who, because of illness or other circumstances, were unable to meet this need through their own resources. In addition, arrangements were made to provide a special shipment of thirty houses to Eskimo Point in order to relieve a serious outbreak of T.B. It is expected that some of these will be purchased by their occupants.

Plans for 1964

A significant change in the duties of the Frobisher Bay Regional Office is anticipated owing to a decision that the Department of Northern Affairs take over from the Department of Public Works responsibility for the allocation of both married and single accommodation, of office and warehouse space and for the maintenance and servicing of government buildings. The duties of the Churchill Regional Office will also be increased because of the decision to make use of a portion of Fort Churchill to provide hostel accommodation and classroom facilities for approximately 400 more Eskimo children from the eastern Arctic. The vocational training centre for the eastern Arctic will be established at Fort Churchill as well. In addition nine new classrooms are planned for the Arctic District.

Programs in cabinet making are planned at Rankin Inlet and a five week Social Studies Curriculum Workshop for teachers will be held in the District.

Additional schools, hostels, warehouses, workshops, staff accommodation, Eskimo dwellings, and power distribution systems will be constructed next year and items already under construction will be completed.

A new fish canning plant will be established in Daly Bay to process Arctic char. Experimental seal netting operations will be carried out at Grise Fiord, Bathurst Inlet, Baillie Islands.

New craft enterprises will be established at Grise Fiord, George River, and Payne Bay.

It is planned that the largest area economic survey yet carried out in the Arctic will begin during the summer of 1964 in the Nettilling Lake area of Baffin Island. The survey carried out in 1964 will be the first step of a planned three-year program.

Provided sufficient staff is available, it is planned to open two new area offices during 1964 at Broughton Island and Resolute Bay.

REVIEW OF 1963 OPERATIONS

Office of the Administrator of the Mackenzie

Organization

The District comprises three administrative Regions with headquarters at Fort Smith, Yellowknife, and Inuvik. Area Headquarters are located in Hay River, Tuktoyaktuk, Fort Simpson, Coppermine, Cambridge Bay, Spence Bay, and Aklavik.

General

During the first half of the year predominant items of interest were the severe floods at Hay River and Fort Simpson. At the end of April a danger of severe flooding at Hay River became evident and townspeople of both settlements had to be evacuated to Fort Smith and Yellowknife. Extensive damage was caused at Hay River, whereas the damage at Fort Simpson was relatively minor.

District administration was carried out by a network of regional and area offices along the Mackenzie River system to the Arctic Ocean and thence eastwards. Several resource development projects operated successfully during the year in the Cambridge Bay and Mackenzie Delta areas.

The Game Management Service reported that the 1963 crop of muskrats was very good and the revenue to the trappers was increased over the 1962 returns. First reports from the District in the early year indicated a large caribou calf crop being born. The buffalo herds in the Wood

Buffalo Park wintered well and the spring calf crop was good. In the spring of the year flooding conditions along the Athabasca, Slave and Peace Rivers caused considerable damage to most Park stations. Anthrax was again found in the buffalo herds near the Slave River, with about the same number of buffalo being stricken as in the previous year.

During the period under review 26 loans to the value of \$173, 790 were approved under the provisions of the Low Cost Housing Ordinances, which are intended to assist residents of the Territories who do not qualify for Central Mortgage and Housing Corporation loans. Moreover, at the end of the year 11 loan applications were being processed.

Municipal Councils at Yellowknife and Hay River spent much time with community planning and development problems during the year; the latter Council, moreover, had to cope with problems arising from the devastating flood and the start of a new sub-division on the mainland. At Fort Smith preliminary work was carried out to enable the community to be established as an incorporated village in early 1964.

Education

School enrolment increased to 4, 385 pupils and close to 1, 100 pupils were accommodated in hostels. The school at Old Crow in the Yukon Territory reverted to that Territory for administration. The school at Tungsten Mine was closed in August 1963. Reflecting the projected increased enrolment in the school at Inuvik, eight temporary classrooms were pressed into service. In Yellowknife a public school district operated an elementary school, while a separate school district operated a school for both elementary and high school classes. In Hay River, a separate school accommodating Grades 1 to 12 was administered by a separate school board. In 1963, 32 students took advantage of financial assistance offered by both the Federal and Territorial Governments for higher learning and vocational training.

Vocational education courses were offered at various locations in the District and in Southern Canada with a total enrolment of 241.

Adult education was carried out by many of our teachers in the evenings. In addition many single meetings, educational film showings, and social recreational evenings were held.

Engineering

At Fort Providence a water treatment plant and a sewage lagoon were built. At Fort Rae the construction of a water treatment plant was nearing completion at the end of the calendar year. The carry-over into 1963 of recruiting and financial restrictions imposed in 1962 continued to affect engineering maintenance and capital projects.

Town planning was carried out at Tuktoyaktuk and Fort Providence. After the flood at Hay River a new sub-division was laid out.

At Fort Franklin an addition to the Federal school and the construction of a bachelor apartment building for two teachers was completed. At numerous other settlements new construction projects were carried out both by departmental work forces and by private contractors.

Departmental buildings and works were maintained. Buildings and works which were partially completed during 1962 were, in most cases, completed. The following buildings were constructed or nearly completed:

- 11 - 3 Bedroom houses
- 13 - 2 Bedroom houses
- 3 - 1 Bedroom houses
- 2 - Apartment buildings
- 40 - Schools, Vocational Shops, Hostels, Transit Centres, Children's Receiving Homes, Rehabilitation Centres
- 4 - Offices or Administration buildings
- 14 - Workshops, Powerhouses, Warehouses
- 8 - Freezers, Refrigerated Warehouses, Ice Houses
- 6 - Homemaking Cabins, Patrol Cabins, Implement Sheds, Arts and Crafts Store
- 10 - Garages
- 2 - Bath house/Laundries
- 2 - Water and Sewer Systems
- 12 - Bulk Oil Storage Tanks
- 1 - Community Hall

The following buildings were partly completed or have been stockpiled (prefabricated) for construction next year:

- 5 - 3 Bedroom houses
- 2 - 2 Bedroom houses
- 12 - Schools, Vocational Training Shops, Hostels, Transit Centres, Children's Receiving Home, Rehabilitation Centres
- 2 - Offices or Administration Buildings
- 7 - Workshops, Powerhouses, Warehouses
- 8 - Homemaking Cabins, Patrol Cabins, Implement Sheds, Sewing Centres, P.O.L. Sheds, Arts and Craft Shops
- 2 - Garages
- 2 - Fish Canneries, Fish Freezing Plants
- 2 - Bulk Oil Storage Tanks

The program of reconstruction of the Mackenzie Highway was completed during 1963 with the completion of the West Channel Bridge and final gravel surfacing and the completion of grading and culverts on this Highway. Near Yellowknife, widening of the section between Mile 0 to Mile 20 of the Ingraham Trail was completed.

The substructure of the combined rail - highway bridge on the Hay River - Pine Point Road was completed. The superstructure of this bridge will be erected next year. Approximately 22 1/2 miles of clearing of the initial 30 miles along this road was completed and the remaining miles in this section will be completed next year.

In Wood Buffalo Park gravelling was carried out on the Fitzgerald - Bell Rock Road. Departmental crews completed work on the Hay Camp - Rocky Point and the Carlson's Landing - Peace Point Road. The grade from Pine Lake to Peace Point was completed. Construction of access roads and trails to various points in Wood Buffalo Park continued.

An additional 35 miles of location surveys on the Fort Providence - Fort Simpson Road were completed for a total of 85 miles. Surveys were also completed on the Pine Point to Fort Smith section and the Bell Rock to Little Buffalo River section of Hay River - Pine Point - Fort Smith Road.

Improvements to local roads throughout the Northwest Territories continued.

Winter clearing was carried out from Bell Rock near Fort Smith to the Buffalo River on the route to Pine Point. Work was done in conjunction with Northern Canada Power Commission's power transmission line.

The Departmental motor vessel "Johnny Berens" which operates on the Mackenzie River near Fort Providence made the first trip on May 17. During the navigation season, 7,149 trips were made and 7,342 vehicles were carried across the river. The final trip was made on November 16.

Industrial

One large area economic survey was undertaken in the Coronation Gulf Region. The survey covered Victoria Island, the mainland of Arctic Canada north of the tree line, between longitudes 102°W, 118°W, and latitude 65°N. The survey provided a much more accurate assessment of the resources in the area than had previously been available. The survey report is now being completed and it will contain recommendations designed to improve the exploitation and use of local resources consistent with conservation. Techniques and methods of assessing resource potential were further improved.

The number of visitors to the Mackenzie District, Northwest Territories increased from 2,000 during the previous year to an estimated 3,200 in 1963 and estimated expenditure passed the million dollar mark for the first time. One new motel was established on the Mackenzie Highway; a new lodge was built on Great Bear Lake; and one new sport fishing camp was established on the Tree River. A survey of boating and canoeing routes from base points on the Mackenzie Highway system was undertaken. A survey to determine the feasibility of sport hunting in the southern portion of the Mackenzie Mountains was completed. An information centre was operated in northern Alberta jointly by the Alberta Tourist Association and Northwest Territories Tourist Association. The Yellowknife Board of Trade also continued operation of a local tourist information booth in the town. A number of newspaper and magazine articles on travel in the Northwest Territories appeared in newspapers and national magazines in the United States and Canada. Particular publicity was given to a trip to Great Bear Lake by the person who made the millionth enquiry to the Canadian Government Travel Bureau during 1962. This trip was sponsored jointly by the C.G.T.B. and the Northwest Territories Tourist Office.

A large scale logging program was carried out in the Mackenzie Delta and approximately 200,000 board feet of lumber was milled.

Welfare

Inuvik Rehabilitation Centre - Forty-five persons are residents of the Inuvik Centre and actively participate in the activities of the Centre. The Delta Logging Project has been turned over to Industrial Division operation as an economic project. A Fish and Meat Shop serves as an outlet for hunting and fishing activities sponsored by the Centre. A handicraft store has been opened to serve as a regional outlet. A staff of five is engaged in running the Centre and carrying out its programs.

Transit Centres - There were transit facilities at Aklavik, Inuvik, and Cambridge Bay for persons coming from or going to hospitals. Transit facilities were also provided at Fort Smith and Yellowknife.

Children's Receiving Homes - A Children's Receiving Home operated at Fort Smith with a capacity of twelve children. A new Home was opened at Yellowknife which will accommodate up to twenty children.

Home for the Aged and Infirm - A home to provide care for elderly people, unable to look after themselves or without relatives, operated in Aklavik.

Housing - Provision was made in 1963-64 estimates to construct forty houses for families who, because of illness or other circumstances, were unable to meet this need through their own resources. Some of these buildings are of log construction and the remainder will be of prefabricated design.

Yellowknife was chosen as the medium security prison location for the Northwest Territories and, with the endorsement of the Municipal Council, a 100-acre site situated one mile from the town centre was approved.

A topographical and soil survey was made by the Department of Public Works; negotiations were initiated with the Municipality for the supply of water; and sketch plans for the institution were prepared by the Engineering Division of this Department.

Plans for 1964

Low cost housing schemes, subsidized by the Federal and Territorial Governments will assume greater importance during the coming year. Already Eskimos of Inuvik are planning to add additional houses to the five already built on a co-operative basis.

A large school and hostel are planned for construction at Cambridge Bay in 1964, while other school facilities are planned for Fort McPherson, Holman Island, Spence Bay and other communities. Minor building programs are scheduled for other areas.

Plans are underway to conduct a fur garment manufacturing course at Fort McPherson or at another community of the Mackenzie Delta, making three centres in the western Arctic where fur garments will be manufactured. A tannery course is planned for Aklavik, one in furniture repairing at Fort Smith and a program of instruction in print making at Holman Island.

A five week curriculum workshop for teachers will be held at Yellowknife to work on the Language Arts Curriculum. Continuing studies in science, preparatory to the writing of a course of studies in elementary school science, will be conducted in the Mackenzie Valley.

Work on the Pine Lake - Peace Point - West Boundary Road will continue and 1964-65 is the final year of work on the section between Pine Lake and Peace Point. Improvements to the existing road and additional work on the Snye Crossing at Fort Simpson will also be carried out. Work will also continue on the road from Hay River to Pine Point and right-of-way clearing from Pine Point and Fort Smith will also continue. Surveys for future development roads and general road construction at various settlements will also be carried out.

Industrial Division projects, including resource harvesting and co-operative development, are expected to play an increasingly important role in the economy of the District.

A further increase in tourist traffic is expected and the total number of visitors may pass the five thousand mark. In this connection a detailed travel survey is planned following the experimental survey of 1963. At least two new sport fishing camps are expected to open and sport hunting camps may be established in the Mackenzie Mountains, depending on approval of the Council of the Northwest Territories. Present plans call for the construction of a large cruise boat to operate on the Mackenzie River between Hay River and Tuktoyaktuk though it may not get into operation until 1965. The survey of boating and canoeing routes in the Territories will be continued. There will be some portage improvement to routes already surveyed and leaflets will be produced describing these routes. A start is expected on a basic regional survey of the Great Slave Lake area which will result in a master plan for future development of the tourist industry in that area, including location of public and private facilities, roads, air strips, etc. Guide training, to provide additional opportunities for employment of territorial residents, will be increased.

Experimental seal netting operations will be carried out at Holman Island, Baillie Islands, and Herschel Island.

Production of arts and crafts is expected and new craft programs will be attempted.

REVIEW OF 1963 OPERATIONS

RESOURCES DIVISION

Oil and Gas

Land Disposition

A total of 672 Canada Oil and Gas Permits covering 43, 576, 994 acres were issued; of this 173 permits covering 8, 934, 103 acres were in the Northwest Territories; 54 permits covering 2, 646, 286 acres were in the Yukon; 190 permits covering 9, 325, 057 acres were in the Arctic Islands; and 255 permits covering 22, 671, 548 acres were in coastal waters. The total acreage under permit and lease on December 31, 1963, was:

Permits

N. W. T. (Mainland)	842	40, 616, 332
Yukon (Mainland)	308	12, 294, 103
Arctic Islands	984	44, 228, 296
Water	<u>481</u>	<u>38, 536, 948</u>
TOTAL	2, 615	135, 675, 679

Leases

N. W. T. (Mainland)	46	213, 008
Yukon (Mainland)	<u>3</u>	<u>13, 220</u>
TOTAL	<u>49</u>	<u>226, 228</u>

Acreage under permit and lease	135, 901, 907
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Two cash bonus permit sales were held during the year. A total of 28 permits were sold realizing \$717, 356.

Fourteen blocks covering 102 grid areas were disposed of realizing a work bonus commitment totalling \$9, 990, 640. This sum has to be expended on exploratory work during the first term of the permits in order to be refundable.

Exploration

Mainland

Surface geological surveys were continued at the same rate

as in 1962. Approximately 24 geological parties continued an extensive investigation of the stratigraphy and structure with most of the work concentrated in the sedimentary ranges of the Mackenzie and Richardson Mountains in the Northwest Territories, and on the Eagle Plains in the Yukon. Utilization of helicopter and light planes as support aircraft has reached its maximum as all supplies and personnel are transported to and from the field by plane and all surface investigations are carried out by helicopter-borne parties. Approximately \$850,000 was spent on this exploratory phase, the major portion of it on helicopter and plane contracts.

Light mobile geophysical equipment was continued to be used and adopted for muskeg terrain. During the past year, four companies used air-borne seismic equipment as part of their exploratory work. The cost is comparable to or cheaper than conventional seismic methods as the amount of trails and seismic lines are reduced and the number of personnel cut in half. One company completed a stratometric survey in the Mackenzie Delta and reported that results were not considered good. Marine seismic surveys were commenced on the West Coast of Canada.

A new well was drilling in the Beaver River area and one significant test was completed in the Eagle Plains area.

Arctic Islands

The number of surface geological parties decreased to 10 in 1963. This was due to the drilling of two wells in the Islands which absorbed most of the explanatory budgets of the companies operating in the Arctic. One well was spudded and completed as a dry well five miles from Resolute Bay. It was adopted and will be utilized as a temperature measurement well by the Department of Mines and Technical Surveys. The second well is drilling on Bathurst Island and by the year end was at the 8,000 foot level. It is scheduled to drill to approximately 10,500 feet to test all prospective Silurian and Ordovician reefs and reefoid carbonates.

Regulations

Regulations pertaining to the disposition of oil and gas under Canada lands remained unchanged. An office consolidation of the Canada Oil and Gas Land Regulations was published.

Publications

The third comprehensive "Schedule of Wells 1920-1963" was commenced during the year. This schedule will contain all the geological information and drill stem tests on wells off the confidential list. Various specialized maps and information circulars were printed for sale and distribution to the oil industry.

MINING - YUKON TERRITORY

The total value of mineral production for 1963 is estimated to be \$14, 626, 150, an increase of approximately \$1, 500, 000 over 1962. The value of gold production remained almost the same as 1962 but silver, lead, zinc and cadmium increased both in quantity and value. Silver again accounted for more than half the value of mineral production. Exploration activity was at a fairly high level and results were encouraging. Renewed interest has been shown by two major asbestos producers in the asbestos properties near Dawson. An old gold property near Carmacks has been reopened and results are most encouraging. Exploration in the Whitehorse Copper Belt has been successful in outlining a medium sized ore body. A promising silver-antimony property north of Mayo is being explored. Many small placer gold operations were carried on but most of the production came from the large dredging operation near Dawson.

The Prospectors' Assistance Program was in operation again but only a few prospectors participated.

Further work was done on the Snake River iron deposits.

Whitehorse Mining District	894
Dawson Mining District	284
Mayo Mining District	371
Watson Lake Mining District	<u>1048</u>
Total	<u>2597</u>

The following table gives mineral production for 1962 and 1963:

1962			1963		
<u>Mineral</u>	<u>Quantity</u>	<u>Value</u>	<u>Quantity</u>	<u>Value (Estimated)</u>	
Gold	54, 805 ozs.	\$ 2, 050, 255	53, 120 ozs.	\$ 2, 004, 749	
Silver	6, 482, 244 "	7, 551, 814	6, 115, 704 "	8, 464, 134	
Lead	16, 290, 125 lbs.	1, 615, 980	17, 479, 163 lbs.	1, 922, 708	
Copper	429, 000 "	132, 990	--	--	
Zinc	11, 888, 876 "	1, 438, 554	13, 834, 854 "	1, 768, 094	
Cadmium	134, 493 "	231, 328	140, 601 "	337, 442	
Coal	<u>7, 649 tons</u>	<u>115, 198</u>	<u>8, 584 tons</u>	<u>129, 023</u>	
TOTAL		\$13, 136, 119		\$14, 626, 150	

MINING - NORTHWEST TERRITORIES

The value of mineral production decreased by approximately \$2, 400, 000 in 1963 to \$14, 391, 055. Gold production decreased slightly but the major decrease in mineral production was due to the closing down of the North Rankin Nickel Mine in 1962. The tungsten mine in the Mackenzie Mountains was forced to close down because of low prices for tungsten concentrates. Exploration for gold was active in the Contwoyto Lake, Itchen Lake, Henik Lakes and Coronation Gulf areas. Intensive exploration was carried on on Baffin Island on a lead-zinc deposit near Admiralty Inlet and on a highgrade iron deposit south of Milne Inlet. Results were very encouraging. A new gold producer located in the barren lands north of Yellowknife, will be in production early in 1964. Preparations for production at the large lead-zinc property on the south shore of Great Slave Lake are well under way.

Some amendments of a minor nature were made to the Canada Mining Regulations. The Prospectors' Assistance Program was again in operation with six parties participating.

The following is a resume of claims staked in the Territories in 1963:

Mackenzie Mining District	2, 593
Nahanni Mining District	208
Arctic and Hudson Bay Mining District	<u>403</u>
Total	<u>3, 204</u>

The following table gives mineral production for 1962 and 1963.

<u>Mineral</u>	<u>1962</u>		<u>1963</u>	
	<u>Quantity</u>	<u>Value</u>	<u>Quantity</u>	<u>Value (Estimated)</u>
Gold	400, 292 ozs.	\$ 14, 974, 924	378, 520 ozs.	\$ 14, 285, 345
Silver	72, 802 "	84, 814	76, 380 "	105, 710
Copper	628, 801 lbs.	194, 928	--	--
Nickel	<u>1, 801, 002 "</u>	<u>1, 503, 837</u>	<u>--</u>	<u>--</u>
TOTAL		\$ 16, 758, 503		\$ 14, 391, 055

LANDS

The development of the new townsites of Hay River and Pine Point provided the two most important problems in the Northwest Territories.

In Hay River, approximately two hundred residential lots were surveyed, of which one hundred and thirty-four have been leased, sold or set aside for government housing, and forty-three exchanges of Vale Island lots for lots in the new townsite have been accepted. By arrangements with Central Mortgage and Housing Corporation and the Council of the Northwest Territories, mortgage money has been made available against lots held under Crown lease.

Clearing of the shopping and commercial area is being completed during the winter, so that road construction and the survey of lots within the area can commence as early in 1964 as weather conditions permit. All the lots in the new subdivision are to be transferred to the Commissioner of the Northwest Territories, so that the proceeds from the sale of the lots can be directly applied to territorial revenue, and help to offset the costs of roads and other services provided by the Council of the Northwest Territories.

At Pine Point, the survey of most of the residential area has been completed, and more than fifty attractive well constructed houses built by the mining company. The accelerated tempo of the construction of the railways will no doubt hasten developments in both townsites.

Additional surveys at most of the other settlements were required and carried out.

In the Yukon Territory a small increase in the volume of transactions is noted with Watson Lake, Whitehorse, Porter Creek and Beaver Creek townsites continuing to provide the bulk of the public interest.

LAND DISPOSITIONS 1963

	<u>Land Sales Completed</u>	<u>Agreements of Sale in Force</u>	<u>Leases in Force</u>	<u>Total</u>
Yukon Territory	114	188	465	767
Northwest Territories	<u>30</u>	<u>161</u>	<u>490</u>	<u>681</u>
TOTAL	144	349	955	1,448

Forestry

While the number of northern timber operations remained unchanged there was a significant increase in the quantity of forest products produced in the Yukon but this was offset to some extent by a decrease in the Northwest Territories. Reduction in lumber production in the Mackenzie was partly due to the closing of the Canada Tungsten Mine and its associated sawmill. However, this was somewhat compensated for by a large order for telegraph poles for the Canadian National Telegraph landline down the Mackenzie valley to Inuvik.

While it is still early to assess the effect to the lower timber dues, initiated in October 1962, there are indications that the decrease in dues has almost been compensated for by the increased production stimulated by the lower dues.

The forest fire weather situation in both territories was even more favourable than in 1962. In the Mackenzie District, 63 fires burned 16,000 acres and 6 in Wood Buffalo Park covered 3,500 acres. While in the Yukon, 44 fires burned over 11,600 acres of which 8,600 acres were in two large fires north of the Arctic circle. Both territories made good use of their trained fire suppression crews who, acting on information from fire-towers or patrol aircraft, were able to take fast action on fires thus keeping the burned area small. In the Mackenzie the program of bringing all fire tool caches up to a good standard neared completion and in the Yukon the fire-tower system was expanded slightly with the completion of the tower at Dawson and the start of one at Carmacks.

The report on forestry radio communications study done for the Department by the National Research Council was received during the summer of 1963 and estimates were prepared for the equipment to initiate the plan in 1964.

Forest Publicity and Education

Forest fire prevention education through press, radio and talks by Forest Service personnel continue to be effective in making the public fire conscious.

Plans for 1964

Oil and Gas

New interest is being shown in the Peel Plateau area, and in 'two work bonus' sales, approximately \$11,000,000 was bid for work to be done on new permits. This should result in the drilling of six-seven wildcat wells beginning in the winter of 1964-65.

Continued interest is being shown in the Liard Basin and Eagle Plains. Both areas will be further explored by drilling new wells in 1964. A second well is scheduled to be drilled on Cornwallis Island this year.

As oil sands deposit on Melville Island will be investigated by the Geological Survey of Canada. It is hoped that a light mobile coring rig can be taken in by plane to determine the thickness of the over burden and the aerial extent of the formation. Better samples are also necessary to determine a more accurate analysis of the oil content and mining and distillation properties.

Work will continue on the Canada Oil and Gas Land Regulations and new orders may be introduced as the requirements dictate.

Work is continuing on the "Oil and Gas Conservation Production Act" and it is hoped that it will be introduced in the new session of Parliament. Following promulgation of the Act, regulations will be prepared.

"Schedule of Wells No. 3" will be published. This will contain the basic information on all wells drilled to the end of 1963 and complete information on the geology and engineering on wells drilled to the end of 1961.

MINING

Northwest Territories

It is expected that gold exploration activity will decrease in the Convoysto and Itchen Lakes areas but will increase in all the other including the area close to Yellowknife.

A diamond drilling program is proposed for the iron deposits on Baffin Island and further work will be done on the lead-zinc deposits on Admiralty Inlet.

The major construction program for the large lead-zinc producer on the south shore of Great Slave Lake will take place in 1964. A new gold producer will be in operation in the barren lands early in the year. No change is expected in the production rates of the existing mines.

The Yellowknife Assay Office will be in operation in the year.

The Prospectors' Assistance Program is being revised to try to encourage more participants.

MINING

Yukon Territory

Activity is expected to be at a fairly high level with the possibility that two or three operations may decide to go into production.

The Prospectors' Assistance Program is being revised in an effort to make it more attractive to the prospectors.

Production at the one lode mine and the placer gold operations is expected to continue normally.

Lands

It is expected that the commercial areas in Hay River and Pine Point will be surveyed and the lots available for disposal by early summer, and that it will be necessary to provide additional residential lots at Hay River.

Two survey parties will again be engaged on legal surveys in the area north of Whitehorse, with one party operating in the Northwest Territories.

Forestry

Firefighting schools will be continued and the forestry radio communications plan will be put into effect. Additional supplies of modern equipment will be purchased replacing obsolete articles of forest fire suppression equipment.

NORTHERN CO-ORDINATION AND RESEARCH CENTRE

Responsibilities To sponsor and conduct research on northern subjects, to encourage northern research by non-governmental agencies, to co-ordinate departmental and interdepartmental research, to collect and disseminate technical and scientific information on the north, and to operate the Inuvik Scientific Research Laboratory.

Long-term Plans

To assist in the development of the Canadian north by encouraging an increasing volume of scientific and technical investigations. To provide adequate laboratory and other facilities in the north for the use of scientists from government departments, universities, and elsewhere.

To administer an expanded program of grants to northern research institutes and northern scientific expeditions.

Review of 1963 Operations

Northern Affairs Library

Over 6,500 books, pamphlets, and periodicals were held in the Library. Some 3,000 books were loaned and 2,000 enquiries received. During the year over 3,500 visits were made to the Library, and approximately 2,500 telephone calls for information were handled.

Facilities for Scientific Research in the North

The scientific research laboratory at Inuvik, including an annex for cosmic-ray studies, was completed and began to operate in December. A manager was appointed, and moved to Inuvik with his family.

Six of the abandoned intermediate D.E.W. Line stations were reserved for use as required for scientific purposes.

Research Programs

Thirteen research projects were continued or initiated. Scientists were employed under contract, through grants-in-aid, or as seasonal employees from universities across Canada. The projects were:

1. An anthropological study of the Back River Eskimos.
2. A sociological study of Whitehorse, Yukon.
3. A social and psychological study of Eskimo residential school children in the Cambridge Bay, Inuvik, and Mackenzie Delta areas.
4. A social and economic survey of the Eskimo community at Frobisher Bay.
5. A study of Eskimo administration in Labrador.
6. A study of the dietary habits of northern residents. This study also included the collection of reindeer, caribou and moose meat samples for checking for radioactive contamination.
7. A survey of economic, social, and demographic change in the Eskimo settlements of the southern littoral of Hudson Strait.
8. A settlement study of Dawson.
9. A terrain analysis of the area between Coral Harbour and Duke of York Bay on Southampton Island.
10. A preliminary study of the tourist industry of the Yukon Territory, with special reference to Whitehorse.
11. A linguistic study of Greenland Eskimo material.
12. A study of the social and economic conditions among the Métis of the Mackenzie District.
13. A social and economic study of co-operative enterprises undertaken by the Eskimos in the settlements of Povungnituk, Port Burwell, and Cape Dorset.

Grants Program for Northern Research Institutes
and Scientific Research Expeditions

During the second year of the new program of assistance to northern research institutes and northern scientific research expeditions, grants totalling \$70,000 were awarded, as recommended by the Grants Committee to the Minister. Grants were made to the Arctic Institute of North America, the Institute for Northern Studies (Saskatchewan), the Centre d'Etudes Nordiques

(Universite Laval), the Boreal Institute (University of Alberta), the Canadian Research Centre for Anthropology (University of Ottawa), the President's Committee on Arctic and Alpine Research (University of British Columbia), the President's Committee on Arctic Research (University of Manitoba), the Institute of Social and Economic Research (Memorial University), the Arctic Institute of North America's Devon Island Expedition, the Jacobsen-McGill Expedition to Axel Heiberg Island, and the University of Ottawa's Expedition to Boothia Peninsula.

Reports

Ten reports were issued during the year.

Plans for 1964

The Inuvik Scientific Research Station will provide facilities for an increasing number of scientists.

The following projects have been listed for investigation and will be carried out to the extent that availability of funds and qualified scientific personnel allow.

1. Continuation of the study of the Métis population.
2. Continuation of the regional survey of the Yukon.
3. Continuation of the Greenland phase of the comparative study of Eskimo administration.
4. Continuation of the study of dietary habits of northern peoples.
5. Continuation of the survey of economic, social, and demographic change on the Eskimo settlements of the southern littoral of Hudson Strait.
6. Continuation of studies into the use of alcoholic beverages by Indians, Eskimos and Métis in settlements in the north.
7. A survey of the fishing and trapping economy in the Northwest Territories.
8. Continuation of the social anthropological study of the Eskimo population at Frobisher Bay.

9. An analysis of population and other data from departmental records to determine Indian and Eskimo population growth rates, numbers of Eskimos and Indians working in wage employment, average yearly family income, relief costs, cost of living in northern settlements, and other factors.
10. A comparative study of Eskimo, Indian, and Métis school children in the day and residential school setting.
11. A study of the problems of the aged in the north.
12. A study of child-raising customs and practices of Indians, Eskimos and Métis.
13. A study of Eskimo families living in southern urban centres.
14. A follow-through study of one or more projects initiated by the Industrial Division of the Department.
15. An investigation of the possibility of devising suitable psychological tests to measure aptitude, intelligence, and basic education achievement in Eskimo, Indian, and Métis school children.
16. A study of juvenile delinquency in northern settlements.
17. A study of school drop-outs in the Northwest Territories.
18. Completion of a study of sovereignty in the Canadian north.
19. A study of inter-ethnic relations in several northern settlements.

NORTHERN CANADA POWER COMMISSION

Responsibilities: To construct and operate power plants in the Northwest Territories and Yukon to supply industrial, commercial, and domestic consumers as authorized by the Governor-in-Council. The plants are self-sustaining, and the power rates provide sufficient revenue to repay capital expenditures over a period of years.

Long-term Plans

To construct, maintain, and expand electrical and utility plants when needed.

Review of 1963 Operations

Northwest Territories

Fort Smith - This diesel electric plant has an installed capacity of 2300 KW and supplies approximately 519 domestic and commercial consumers. The plant has a staff of 7 and gross revenue for the year was approximately \$262, 000.

Inuvik - The electric power generating capacity of this plant was increased to 3460 KW by the installation of a 1000 KW diesel unit. 600 KW of this capacity is provided by a back pressure steam turbine and the remainder by diesel engines. The steam raising capacity for central heating purposes remains at 90, 000 lbs/hr in 3 - 30, 000 lbs/hr. boilers. At the end there was 370 electrical power connections and 229 connections to the central heating, water, and sewage systems. Maintenance of mechanical and electrical installations in the various government buildings continued. The plant had a permanent staff of 26 and gross revenue was approximately \$779, 000. Some 1, 600 ft. of utilidor structure was constructed to supply the new Scientific Research Laboratory building and twelve new quadruplex housing units.

Fort McPherson - On behalf of the Department of Northern Affairs and National Resources the Commission operated the power plant, heating system, and water and sewage associated with the school and hostel at Fort McPherson. Power was also supplied on a commercial basis to several other government establishments and 20 private consumers. The permanent operating staff was 10. All costs were recoverable from the Department of Northern Affairs and National Resources, after crediting billings to other departments and private consumers.

Fort Simpson - The electrical generating capacity of this plant remains at 1075 KW. There were 184 electrical connections. The Commission continued to operate and maintain the central heating plant associated

with the school and hostels, and the water and sewerage system supplying the community on behalf of the Department of Northern Affairs and National Resources. All costs in connection with these operations were recoverable from the Department of Northern Affairs and National Resources after crediting billings to other departments and private consumers. The power plant had a staff of 12 full-time employees and an average of about 10 employees were engaged in the central heating plant and water and sewerage systems. Gross revenue for the year from the sale of electric power was approximately \$133, 000.

Aklavik - The Commission continued the operation of the Aklavik diesel electric plant on behalf of the Department of Northern Affairs and National Resources. This plant has a nominal capacity of 350 KW. About fifty percent of the necessary renovations to the distribution system were completed and a bulk oil storage tank erected.

Frobisher Bay - The Commission continued to lease the 1000 KW generating plant and distribution system from the Department of Transport, and operated the two 1000 KW Commission owned diesel electric units, providing a total capacity of 3000 KW. Construction of a power and central heating plant to supply the existing load and the anticipated new townsite development was continued with completion scheduled for early 1964. Work on this plant was too far advanced to warrant any major revision other than the cancellation of one of the two 1000 KW slow speed heavy duty diesel generating units planned for the plant, when it became evident that there would be significant changes in the development plans for this area. The plant had an operating staff of 11 and gross revenue for the year was approximately \$446, 000.

Fort Resolution - This 325 KW plant began operation in February 1961; 40 customers are now being served. The staff has 2 permanent employees and gross revenue for the year was approximately \$153, 000.

Snare River-Snare Rapids - Two hydro electric plants of 8350 HP and 9200HP, located 90 miles northwest of Yellowknife and commissioned in 1948 and 1960 respectively, supplied the Yellowknife area. Four mines received power direct from the plant and a private utility company purchased power for resale to domestic and commercial users in Yellowknife. The plant had 12 employees and a gross revenue of approximately \$597, 000.

Yukon Territory:

Mayo - A 6000 HP hydro plant supplied the mining industry in the Galena and Keno Hill areas and the communities of Mayo and Keno City. The plant has 8 employees and a gross revenue of approximately \$142, 000.

Whitehorse - A 15,000 HP hydro electric plant, on the Yukon River about two miles upstream from the city, supplied the entire power requirements of the Department of National Defence and a substantial part of the needs of the city of Whitehorse, supplementing the Yukon Hydro Company's own hydro sources. Power for generation of steam in electric boilers for heating purposes was supplied to the Department of National Health and Welfare hospital and the Protestant and Roman Catholic hostels at rates designed to be competitive with the cost of oil heating. The resulting revenue had a favourable influence on the rate for power supplied direct to the Department of National Defence and for distribution by the Yukon Electrical Company within the city of Whitehorse. The plant had a full-time staff of 7 and a gross revenue of approximately \$502,000.

Plans for 1964

The following projects will be undertaken -

- (a) General maintenance of transmission lines and plants and extension of distribution systems as required to service new construction.
- (b) Completion of the new power and central heating plant at Frobisher Bay and extension of heating service to the composite Federal Building (formerly S.A.C. premises).
- (c) Extension of utilidor system at Inuvik to serve additional housing.
- (d) Start on construction of a 25,000 HP hydro electric development at a site on the Taltson River approximately 35 miles northeast of Fort Smith and associated transmission line to supply Pine Point Mines Ltd. and the Fort Smith area.
- (e) Subject to Governor-in-Council approval, construction of a transmission line from Yellowknife to Rae, N.W.T. to serve the communities of Rae, Stagg River, and Frank Channel, N.W.T.

NORTHERN TRANSPORTATION COMPANY LIMITED

Responsibilities To act as a common carrier of freight in the Western Arctic and on the Mackenzie River system including Lake Athabasca, Great Slave and Great Bear Lakes, under the jurisdiction of the Board of Transport Commissioners. To distribute freight by sea from Tuktoyaktuk to DEW Line stations in the Western Canadian Arctic.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1963 Operations

Tonnage handled by the Company was up 5% from 1962. Tonnage carried on the Mackenzie River system was 119,616 tons; of this 45,502 tons moved in to Northern Alberta and Saskatchewan from Waterways, 16,955 tons moved from Alberta into the Northwest Territories, 13,545 tons moved southbound to Waterways, and the balance represented movements within the Northwest Territories, Alberta and Saskatchewan. Along the Arctic coast, general cargo and petroleum products were delivered to DEW Line stations.

During the year Northern Transportation Company undertook added responsibility in the Western Arctic. Approximately 3,000-tons of oil drilling equipment was delivered down the Mackenzie and along the Arctic coast westward to the Colville River in Alaska, the ultimate discovery being made approximately 35-miles up this River. This opened up a new supply route to the northern slope in Alaska with the supplies originating in Canada.

In addition, Northern Transportation took over the Hudson's Bay Company operation in the Western Arctic from Tuktoyaktuk to the Boothia Peninsula.

All resupply to the DEW Line stations was completed on schedule.

Plans for 1964

Capital expenditures are estimated at \$337,400 including items carried over from last fiscal year. This covers replacement of equipment and initiation of a program of development at Hay River, the terminal for the Great Slave Lake Railway.

POST OFFICE DEPARTMENT

Responsibilities Provision of mail service to and from post offices
in the Canadian North.

Long-term Plans

To provide adequate mail service subject to the availability of transportation services.

Review of 1963 Operations

Transportation

The following table lists the scheduled air and surface mail transportation services on which mails were conveyed to and from the Yukon and Northwest Territories showing the expenditures for the fiscal year 1962-63 as compared with the year 1961-62.

Yukon

<u>Air Transportation</u>	<u>1962-63</u>	<u>1961-62</u>
Dawson-Old Crow	\$ 8,898.95	\$ 4,041.40
Dawson-Stewart River	2,379.84	2,160.00
Vancouver-Whitehorse	489,804.13	420,011.86
Whitehorse-Dawson	<u>25,831.25</u>	<u>25,920.75</u>
Total	\$ 526,914.17	\$ 452,134.01

Surface Transportation

Atlin-Whitehorse	\$ 6,000.00	\$ 6,000.00
Dawson-Granville	1,820.00	1,418.18
Dawson-Creek-Whitehorse	76,630.00	76,630.00
Keno Hill-Mayo	3,744.00	3,744.00
Whitehorse-Alaska		
Highway Mile 1202	8,954.00	8,954.00
Whitehorse-Dawson	<u>11,995.00</u>	<u>11,995.00</u>
Total	\$ 109,143.00	\$ 108,741.18

Total expenditure for
conveyance of mail to
and from the Yukon \$ 636,057.17 \$ 560,875.19

Northwest Territories

Air Transportation

Edmonton-Mackenzie River Area	\$454, 237.56	\$452, 612.20
Fort Churchill-Baker Lake	47, 145.72	45, 272.63
Fort Churchill-Coral Harbour	6, 169.68	4, 912.56
Inuvik-Sachs Harbour	163.63	-
Inuvik-Tuktoyaktuk	813.00	1, 163.00
Montreal-Resolute	125, 088.13	100, 913.75
Yellowknife-Discovery	<u>1, 389.10</u>	<u>1, 360.70</u>
<u>Total</u>	\$635, 006.82	\$606, 234.84

Surface Transportation

Hay River-Rae	\$ 1, 500.00	\$ 1, 500.00
Peace River-Hay River	<u>39, 900.00</u>	<u>15, 115.10</u>
<u>Total</u>	\$ 41, 400.00	\$ 16, 615.10

Total expenditure for conveyance of mail to and from the Northwest Territories	\$676, 406.82	\$622, 849.94
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Mail was also despatched to settlements in the North by government and privately owned vessels and by courtesy flights of the R.C.A.F. and R.C.M.P.

The Christmas Air Drop was again provided by the R.C.A.F. and 5,494 pounds of mail were dropped by parachute to 15 settlements.

New Post Offices

<u>Name of Office</u>	<u>Date Established</u>
Eskimo Point, N.W.T.	January 3, 1963
Whale Cove, N.W.T.	April 1, 1963

Plans for 1964

To maintain adequate service requirements.

DEPARTMENT OF PUBLIC WORKS

Responsibilities Site investigation, planning and construction of buildings, highways, and bridges for both public use and to meet the requirements of other government departments. Maintenance and improvements to river routes and provision of wharves and harbour facilities as well as river bank protection. The planning and installation of sewer, water, and power services in northern settlements. The provision of architectural and engineering services to all government services as required. The acquisition, management, and control of government properties. The construction and management of federal housing in northern settlements. The development planning of townsites for larger settlements. Assistance in building research when required.

Long-term Plans

To act as architectural and engineering consultants and construction agent for the government on the effective development of northern Canada. To assist in the planning and construction of properly developed centres from which to administer and develop the North. These centres are Whitehorse, Inuvik, Yellowknife, Fort Smith, Hay River, Frobisher Bay, and Churchill. To continue the construction of "year round" highways northward into the Northwest Territories. To continue to maintain and improve navigable waterways. To establish housing standards for federal employees in northern communities.

Review of 1963 Operations

Planning and construction work was undertaken for twelve departments of the federal government. Work was started on over 100 projects of varying sizes, including a few carried over from 1962.

One of the more urgent problems was the Hay River flood. The essential role of the Department was -

1. To act as co-ordinator with other government departments during the actual flood emergency;
2. To restore essential services as quickly as possible;
3. To assess the damage;
4. To develop a plan for relocation and to co-operate with municipal authorities in rehabilitation.

The above actions involved all branches of the department and the success of this combined operation can best be judged by the fact that conditions were returned to near normal during the year. The new townsite has been surveyed, roads constructed, and a number of buildings have been erected or are in the process of being erected there.

A large school was constructed as well as a number of smaller buildings in Tuktoyaktuk. The Scientific Research Laboratory was completed at Inuvik with accommodation for 20 scientists. This building included a Cosmic Ray Laboratory for the National Research Council; 48 houses (housing units) were also constructed at Inuvik as well as a number of small projects. Plans have been completed for a large addition to the Sir John Franklin School at Yellowknife and tenders are presently being called for this project. A number of smaller projects were completed at Coppermine, Hay River, Fort Simpson, Eskimo Point, Payne Bay, and Pangnirtung. Work on Phase I of the Frobisher Bay Development is nearing completion. It is expected that the Hospital will be occupied and the water treatment plant put into operation early in 1964. A number of projects for the R.C.M. Police and D.O.T. were constructed in various locations. The large hostel and addition to the school at Fort George for the Department of Citizenship and Immigration was completed and a start has been made on the construction of 6 houses for the Department of Transport at Fort Chimo.

Site surveys have been completed for the construction of medium security prisons at Yellowknife and Whitehorse.

Construction of the gravel highway between the Alberta boundary and Hay River including the bridge over the west channel was completed, as was construction on 25 miles of the 34.5 mile contract for a new road from Hay River to Buffalo River. Tenders have been called for a bridge across the Buffalo River and the construction of a road from the Buffalo River to Pine Point. The road location survey between Pine Point and Fort Smith has been completed and arrangements have been made to clear a common right-of-way for the road and Pine Point Mines power line on this location.

Gravelling and grading of 38 miles of road south of Fort Smith from Pine Lake to Peace Point has been completed. Field work was continued on the road location from Fort Providence to Fort Simpson.

Essential services were restored at Fort Simpson following the Mackenzie River flood.

Engineering investigations were carried out at a number of settlements for other government departments and the construction of a seismic vault was completed at Yellowknife for the Department of Mines and Technical Surveys. A complete aerial reconnaissance from Fort Simpson to Inuvik was performed for the Canadian National Telegraphs ground line.

One hundred and six miles of grading on the Watson Lake - Ross River Development road has been completed as well as 50 miles southeasterly from Ross River. Graveling of 80 miles of the Nahanni Range road and the construction of a relief landing strip at mile 69 was completed. A number of surveys of various roads were undertaken and winter maintenance was carried out on 112 miles of the Haines cut-off road.

Maintenance dredging was continued on the Athabasca and Mackenzie Rivers. A considerable amount of work was involved as a result of the Hay River Flood. A new channel has been completed through Beaver Lake on the Mackenzie River and improvements were made in the channel through Green Island Rapids near Fort Simpson. Tenders have been called for a new tug for dredging work in the Mackenzie River. Repairs were made to wharves at various points in the N. W. T., Northern Saskatchewan, Northern Quebec and the James Bay area.

The Department managed pool housing at Inuvik, Yellowknife, Hay River, Fort Smith and Whitehorse.

The construction programs of government departments indicate that activity in the North will continue at much the same level as in 1963 although it will be concentrated in fewer settlements than in previous years. An increased amount of work will be awarded to general contractors after public tender calls.

Tenders are presently being called for a 5-classroom and mining shop addition to the Sir John Franklin School in Yellowknife. Plans are being prepared for a new school at Fort McPherson to contain 4 classrooms, gymnasium, industrial arts shop and home economics room. Site surveys have been completed and preliminary plans are being prepared for medium security jails at Yellowknife, and Whitehorse. Federal Buildings are to be constructed at Hay River, Fort Simpson and a new post office at Fort Smith. Foundation piles are presently being placed at Inuvik for 12 housing units and a single staff quarters building.

A number of projects will be undertaken for the R. C. M. P. and National Health and Welfare, and it is expected to construct a considerable number of houses and other small buildings at various locations for the Department of Northern Affairs and National Resources.

The Department will continue as construction agent for the Department of Northern Affairs and National Resources under the Development Road Programs in the Yukon and Northwest Territories.

In the Yukon Territories, work will be completed on construction of 75 miles of the Watson Lake - Ross River Road begun in 1962 and construction of the final 30 miles is scheduled to be under contract during 1964.

In the Northwest Territories construction will be concentrated on the road from Hay River to Pine Point. This road, which is scheduled to be opened to traffic by the end of 1964, includes bridges over the Buffalo, Sandy, Birch, and Twin Rivers. Clearing of the right-of-way for a road between Pine Point and Fort Smith will also be completed as well as the location survey for a future road between Fort Providence and Fort Simpson. Planning will be undertaken towards constructing a new road to the West Channel Settlement within the municipal district of Hay River.

On behalf of the Department of Mines and Technical Surveys, work will continue on the construction of a seismic array at Yellowknife.

The Department will assist the CNT in locating and constructing new telegraph ground lines in the Northwest Territories.

Responsibility for the Northwest Highway System will be transferred from the Department of National Defence to the Department of Public Works on April 1, 1964. This includes the operation, maintenance and future development of the Alaska Highway in Canada (1,138 miles), the Haines Cut-off Road (117 miles), and numerous access roads from the main highway.

Most of the responsibility now carried by the Department of National Defence at Fort Churchill will be transferred to the Department of Public Works on April 1, 1964. This includes the operation and maintenance of roads, Crown-owned buildings, and utilities in the Churchill area.

An extensive continuing program of surveys will be undertaken with parties on both the Mackenzie and Athabasca River systems to investigate areas of difficult navigation and to plan future dredging projects.

On the Mackenzie River, dredging will be completed at Green Islands Rapids and a start made on what is expected to be a three-year program at the Sans Sault Rapids. Maintenance dredging will be done at the Hay River entrance channel and at various places on the Athabasca River. A start will be made on mooring basins at Norman Wells. A new tug for service with the dredging plant will be built.

An extension to the wharf at Hay River and a new floating wharf at Aklavik to replace the one damaged by erosion are expected to be built by contract this coming season, although they may possibly take two seasons. A new wharf is to be built at Missinipi, Saskatchewan.

ROYAL CANADIAN MOUNTED POLICE

Responsibilities The Royal Canadian Mounted Police is the only law enforcement agency in the Yukon and Northwest Territories and is responsible for the enforcement of Federal Statutes, Territorial Ordinances, and the Criminal Code. In addition, the municipalities of Whitehorse, Dawson, Yellowknife, and Hay River are policed by members of the Force. As well as this basic responsibility for law enforcement, the Force performs a number of varied functions on behalf of other departments and agencies.

Long-term Plans

The increased concentration of population about the northern settlements is resulting in more time being spent policing these immediate areas, with less emphasis resting on patrol of the outlying areas. However, dog, boat, and aircraft patrols continue to cover every place. The increase in field staff of other Government Departments is gradually relieving the Force of many of the extra duties which it has been performing.

The location and strength of detachments continue to alter a little from year to year in order to cope with economic and industrial developments, population shifts, changing patterns of crime, and such matters as flood and epidemic

Review of 1963 Operations

<u>Mileage</u>	<u>1962</u>	<u>1963</u>
Dog Team.....	32, 347	41, 054
Boat.....	71, 704	98, 875
Foot Patrols.....	38, 328	32, 230
Aircraft, railway, motor-vehicle.....	1, 249, 500	1, 437, 700
<u>Investigations</u>	<u>1962</u>	<u>1963</u>
Offences Investigated.....	7, 750	8, 311
Other Duties Performed.....	36, 750	44, 435
Prosecutions, other than liquor.....	6, 190	5, 895
Prosecutions (Liquor).....	3, 167	3, 928
Murders Investigated.....	2	3
Narcotics Investigated.....	-	1
TOTALS	<u>53, 859</u>	<u>62, 573</u>

<u>Prisoners Handled</u>	<u>1962</u>	<u>1963</u>
Yukon Sub-Division.....	2, 189	2, 065
Fort Sub-Division.....	1, 028	1, 145
Western Arctic Sub-Division.....	497	632
Central Arctic Sub-Division.....	21	25
Eastern Arctic Sub-Division.....	<u>129</u>	<u>86</u>
TOTALS	<u>3, 864</u>	<u>3, 953</u>

Detachments continued to operate police cells as Territorial gaols. These units were not designed or equipped for this purpose and consequently they are not satisfactory and require replacement by construction of Territorial gaols.

In isolated areas members continued to render routine medical assistance. Everywhere assistance was given to the enforcement of the Dog Ordinance, and to the inoculation of all dogs for rabies, and in some instances, disorder. Patrols were made to Eskimo and Indian camps to enquire into the health and welfare of the people, look into game matters, and record all information of interest to the Force and other Government Departments. Close touch was kept with tourists travelling northern routes, to ensure safe arrival at their destinations. Highways were patrolled, and water craft checked to ensure compliance with safety regulations.

Members were engaged in the Scouting Movement, hockey and baseball activities, youth work, and a number of special fields wherein emphasis on prevention of crime was a major consideration.

Five aircraft were engaged in duties in the Yukon and Northwest Territories; these being posted to Whitehorse, Inuvik, Fort Smith, Frobisher Bay, and Churchill. Aircraft CF-MPO crashed at Carmacks, Y.T., on July 13, 1963, killing four members of the force and one civilian.

The proposed financial agreements covering the policing of the Yukon and Northwest Territories were not signed. The Force continued, however, to operate in the spirit of these documents.

A telex system was established at Whitehorse and Fort Smith. Single Side Band radio connected Inuvik, Whitehorse, and Fort Smith. A number of detachments received telephone service.

Alexandra Fiord and Chesterfield Inlet Detachments were closed and strength reduced by three special constables and one civilian employee.

Plans for 1964

Consideration is being given to moving Central Arctic Sub-Division Headquarters to Churchill, Manitoba, and to opening detachments at Pine Point, Holman Island, and Igloolik. Herschel Island Detachment will be closed.

No appreciable building program is planned, and purchase of land and water transport remains constant.

Efforts are being made to convert as many uniformed member positions as possible to civilian status as an economy measure.

Close liaison with Federal Government Departments and the Territorial Governments will be maintained.

DEPARTMENT OF TRANSPORT (AIR)

CIVIL AVIATION BRANCH

Responsibilities Operation and management of departmental airports,
and supervision of several airports operated by
other agencies.

Long-term Plans

To anticipate as far as possible the future needs of civil aviation in the north.

Review of 1963 Operations

Frobisher Airport, N. W. T. -

A major change took place with the United States Government announcement in 1963 that the United States Air Force, Strategic Air Command (SAC) would cease operations here. Subsequently, the SAC 4085 Air Base Squadron discontinued operations at Frobisher on July 5, 1963.

The USAF Composite Building and related structures constructed by the USA at a cost of some \$11,000,000 were turned over to Canada at no charge. The Department of Transport accepted these facilities and subsequently turned them over to the Department of Public Works to operate.

As the result of a Government directive to utilize fully the Composite Building comprising some 165,000 square feet, the Department of Public Works become the landlord and other departments, notably the Department of Transport and the Department of Northern Affairs and National Resources, started to move personnel and services. As of December 7, 1963, the Department of Transport had moved single staff, messing, vehicles and supplies into the Composite Building. Consequent upon this move, certain Department of Transport buildings are being closed down and held for emergency requirements.

When all consolidation is completed and as the result of the USAF ceasing operations, it is planned that the Civil Aviation establishment will be reduced by 50%.

Yellowknife, N. W. T. -

Among other improvements, a \$400,000 air terminal building was completed and opened for air traffic.

Watson Lake, N. W. T. -

A sum of \$800,000 is being spent at this airport to strengthen and resurface

runway 08-26, and to improve the parking apron and associated taxiway. This work was 70% completed.

General -

General improvements to runways, accommodation and navigation systems were made in varying degrees at Banks Island, Whitehorse, Norman Wells, Fort Simpson, and Hay River. No new aerodromes were taken over.

Plans for 1964

The Civil Aviation Branch will assume responsibility for the operation and maintenance of the airfield at Resolute, N.W.T. and for the maintenance of the airfield at Churchill, Manitoba on April 1, 1964. It will continue to carry out studies regarding civilian requirements for farther flying in the North.

Improvements to airstrips and buildings will be made.

CONSTRUCTION BRANCH

Responsibilities Construction for the Air Services of the Department of Transport.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1963 Operations

The Construction Branch undertook and carried out:

- (a) Airport development and lighting projects:
 - (i) In the Northwest Territories: Baker Lake, Eureka, Cambridge Bay, Banks Island, Norman Wells, Yellowknife, Inuvik, and Alert.
 - (ii) In the Yukon Territory: Whitehorse and Watson Lake.
 - (iii) In the Provinces: Fort St. John, B.C., Fort Nelson, B.C., Fort Chimo, P.Q., Lynn Lake, Man., Grande Prairie, Alta., and Port Harrison, P.Q.
 - (iv) In Labrador: Goose Bay and Cartwright.
- (b) Buildings and other miscellaneous projects:
 - (i) In the Northwest Territories: Frobisher, Clyde River, Banks Island, Baker Lake, Coral Harbour, Eskimo Point, Eureka, Resolute Bay, Cambridge Bay, Coppermine, Yellowknife, Inuvik, Alert, Rankin Inlet, Fort Simpson, Chesterfield Inlet, Isachsen, Mould Bay and Fort Good Hope.
 - (ii) In the Yukon Territory: Watson Lake and Whitehorse.
 - (iii) In the Provinces: Fort McMurray, Fort St. John, Fort Chimo, P.Q., Grande Prairie, Alta., and Churchill, Man.
 - (iv) In Labrador: Goose Bay and Cartwright.

Plans for 1964

The Construction Branch will complete or continue work in progress, or begin new work as follows:

- (a) Airport development and lighting:
 - (i) In the Northwest Territories: Yellowknife, Inuvik, Cambridge Bay, Baker Lake, Norman Wells, Frobisher.
 - (ii) In the Yukon Territory: Whitehorse and Watson Lake.
 - (iii) In the Provinces: Fort Chimo, P.Q., Fort Nelson, B.C., Fort St. John, B.C.
 - (iv) In Labrador: Goose Bay and Cartwright.
- (b) Buildings and other miscellaneous projects:
 - (i) In the Northwest Territories: Nottingham, Isachsen, Mould Bay, Coral Harbour, Fort Simpson, Yellowknife, Inuvik, Norman Wells, Alert, Arctic Bay, Banks Island, Cambridge Bay, and Frobisher.
 - (ii) In the Yukon Territory: Whitehorse, Burwash Landing, Mayo, and Teslin.
 - (iii) In the Provinces: Churchill, Man., Fort Chimo, P.Q., Fort Nelson, B.C., Fort St. John, B.C., McMurray, Alta., and Smith River, B.C.
 - (iv) In Labrador: Goose Bay and Cartwright.

METEOROLOGICAL BRANCH

Responsibilities

Provision of adequate meteorological facilities and services to meet requirements. Research necessary to support these services and to increase understanding of the weather and climate of northern Canada, both near the surface and in the upper atmosphere. This involves the operation of surface and upper air observing stations, obtaining of meteorological reports from ships in northern waters, ice reconnaissance, the provision of weather forecasting and weather advisory service, and ice forecasting and ice advisory service for the navigable waters of the north. In addition to the 13 upper air stations in the north the Meteorological Branch shares jointly with the United States Weather Bureau responsibility for operation of the Arctic Meteorological Observatories at Resolute, Alert, Eureka, Isachsen and Mould Bay, for maintenance of the supporting airstrips at the east four of these stations, and for their further development to permit use during the summer months. The Meteorological Branch operates telecommunications facilities at these stations, with the exception of Resolute, in support of the meteorological program.

Long-term Plans

To provide more complete meteorological and related scientific information in the north, requiring an expanded network of surface weather observing stations and improved equipment for upper air observations to higher levels; to provide forecasting services as needed for expanding human activities in the North; to provide more married living accommodation at several locations in order to encourage more experienced personnel to serve at these stations; to operate seismic vaults for the Department of Mines and Technical Surveys at a few locations; to undertake a program of ozone, water vapour, and radiation observations to high levels in the atmosphere at certain stations.

Review of 1963 Operations

Surface synoptic and/or aviation weather reports were taken, recorded, and transmitted from 56 stations north of latitude 60°. Included in this total were 16 stations along the DEW Line. At four of these last stations, Cape Parry, Cambridge Bay, Hall Beach, and Cape Dyer, meteorological technicians were assigned to provide a more complete meteorological observing program. Three

Three meteorological inspectors were assigned for duties along the DEW Line. At other stations in the north, meteorological inspections were carried out by Regional Meteorological Inspectors.

All the upper air stations maintained their full program of two rawinsonde ascents per day sending instruments aloft to heights averaging over 80,000 ft. to measure and transmit temperature, pressure, and relative humidity data throughout the ascents. These instruments were also tracked in the course of their ascent to determine the upper winds at the various levels. Significant progress was made in the effort to achieve higher levels in upper air and upper wind observations. Additions to the hydrogen buildings were constructed to enable inflation and release of larger aerological balloons capable of attaining an altitude of 100,000 ft. Fibreglass domes were purchased and forwarded to all the upper air stations to house the new electronic ground equipment which is scheduled for installation within the next year or two.

The Arctic Forecast Team, a component of the Edmonton Forecast Office, continued to provide routine and special forecasts for various activities in the Arctic. Similar services were provided by the forecast office at Whitehorse, Goose Bay and Winnipeg for the Yukon, Baffin Island and the southern part of the Northwest Territories.

Forecast Offices at Resolute, Frobisher, Yellowknife and Churchill provided aviation briefing and other specialized local forecast services for activities in the Arctic.

In July a High Level Forecast Centre in Montreal began to issue, on a routine basis, forecasts for high-altitude aviation, covering areas from the Canada-U.S. border to the North Pole. These forecasts were distributed throughout Canada, and internationally, by facsimile.

The Ice Central, located in Halifax, issued seasonal outlooks, thirty-day forecasts and five-day forecasts for arctic waters. A Field Ice Forecast Office operated at Frobisher from mid-July to early October, and provided short-range forecasts and advisories for the Hudson Bay route, Foxe Basin, and the Eastern Arctic. Similarly an office operated at Cambridge Bay, and for a short period from Resolute, from mid-July until late September to cover the coastal areas of the Central and Western Arctic. In continuation of the responsibility of the Meteorological Branch for ice observing and reconnaissance over ice-infested navigable waters adjacent to Canadian waters, Meteorological Branch ice observers carried out a total of 3207 hours of aerial ice reconnaissance, of which 2123 hours were in arctic or sub-arctic areas. Shipboard ice observers were assigned to Canadian Coast Guard ships for a

total of 979 days, of which 520 were on voyages to arctic or sub-arctic destinations.

Two series of "Round Robin" ice reconnaissance flights over arctic and sub-arctic waterways significant to marine shipping were completed in April and May. The two series of flights totalled 94:24 flying hours.

Eleven ice observers were deployed, as required, at four Field Ice Reconnaissance Units during the Summer and Fall. All four aircraft used for surveillance were equipped with airborne radar.

	<u>FLIGHTS</u>	<u>FLYING HOURS</u>	<u>TACTICAL SUPPORT</u>
1. Queen Elizabeth Islands Base - Resolute, N. W. T.	28	192:59	18
2. Canadian Western Arctic Base - Cambridge Bay, N. W. T.	44	293:49	10
3. Hudson Bay and James Bay Base - Churchill, Manitoba.	36	277:00	15
4. Hudson Strait, Foxe Basin, Davis Strait, Base - Frobisher Bay, N. W. T.	52	470:34	30
5. MacKenzie River System Base - Fort Smith, N. W. T.	12	54:40	10
	<u>172</u>	<u>1289:02</u>	<u>83</u>

In addition, ice observers accompanied routine R.C.A.F. ATC flights, training flights, familiarization with USN and USCG, and special projects for 545:50 flying hours.

Ice observers were assigned to the following six icebreakers for 520 days, while on escort and associated duties, during the summer and fall:

C.C.G.S. JOHN A MACDONALD C.C.G.S. d'IBERVILLE

C.C.G.S. LABRADOR C.C.G.S. N.B. McLEAN

C.C.G.S. SIR HUMPHREY GILBERT C.C.G.S. CAMSELL

Two hundred and thirty-five short range helicopter flights, totalling 153:30 flying hours, were completed from these icebreakers.

Forty-two stations co-operated in taking once-a-day shore station reports, as required, during summer sealift operations. Thirty-two selected sea and inland stations in the arctic and sub-arctic participated in the once-weekly ice thickness program from Freeze-up 1962 to Break-up 1963.

This was the first year in which radar was used on all aircraft including the arctic operations. The results were better than anticipated, as radar had two functions: -

1. Seeing through cloud.
2. Determining accurate distances of prominent ice features.

The radar increased the efficiency of flights, as the observers were able to track through cloud the ice edge, as well as the presence or absence of ice. Radar also assisted in navigation in northern areas, as well as in locating ships for rendezvous for tactical support.

Ice observers participated in Project Bold Survey, a joint U.S./Canadian investigation of the use of infra-red sensors for ice reconnaissance. The ice observers provided airborne visual ice observations and shipboard ice and weather observations to correlate the infra-red imagery. An ice observer on board C.C.G.S. LABRADOR participated in the tracking of shelf ice fragments from Ice Island Ward Hunt Five.

At the Joint Arctic Weather Stations Resolute, Alert, Eureka, Isachsen, and Mould Bay, the meteorological program consisted of regular surface synoptic observations 8 times per day, 2 upper air (rawinsonde) and 2 pilot balloon observations daily. Systematic observations were made of sea ice thickness, snow surface and profile, tides, and wind chill. Other observations included soil temperature in permafrost to a depth of 650 ft. at Resolute, ozone and radiation measurements at Resolute, auroral observations at Alert, Resolute and Mould Bay, rates of evaporation, amount of sunshine and fallout at Resolute, profile of sea ice temperatures at Mould Bay, precipitation samples at Alert, solar radiation at Alert, Eureka, and Resolute.

The airstrip improvement program was continued at Alert, Eureka, Isachsen, and Mould Bay to meet minimum RCAF requirements for dimensions of 5,000 ft. x 200 ft. While these airstrips were originally used only during the spring and fall airlifts for resupply of the stations, the one at Alert is now kept open

throughout the year. The remaining airstrips have been developed sufficiently to permit their use during the major part of the summer by light aircraft and occasional heavy aircraft, as well as for major air resupplies during the spring and fall when the soil is frozen. With the accumulation of fill, the airstrips at Eureka and Isachsen and to a lesser extent the one at Mould Bay tend to blow clear of snow, and may be opened during the winter months if necessary. Those at Alert and Mould Bay are now 200 ft. wide and over 5,000 ft. long, and progress is being made toward these dimensions at Eureka and Isachsen. All of the Joint Weather Stations are now equipped to handle and store fuel oil in bulk, and full use was made of these facilities at Alert, Isachsen, and Mould Bay during the spring resupply, and at Eureka during the summer sea supply. Improved upper air equipment was in use throughout the year at Alert, Eureka, Isachsen, and Mould Bay, and was installed and activated at Resolute in October. The rehabilitation of Eureka, and the relocation of the Upper Air installation at Resolute were completed during the construction season.

The automatic weather station, installed at Sherwood Head, Axel Heiberg Island in 1961 continued to transmit meteorological data including barometric pressure, temperature, wind direction and speed every three hours until September 1962. After that date the instrumentation showed decreasing reliability, and was removed in August for servicing.

Plans for 1964

Delivery of some units of the new GMD radiotheodolites is expected. Considerable work will be undertaken at all the upper air stations in removing or planning removal of artificial obstructions to the natural horizon. The new GMD equipment will require an unobstructed horizon down to 4° elevation if wind observations up to heights of 100,000 ft. are to be realized. Some stations such as Frobisher Bay and Clyde River may have to be relocated to attain this objective.

It is planned to increase the quality of ice observations by supplementing existing methods with improved radar, and possibly infra-red and satellite observations and also by the use of more precise navigational equipment on aircraft. It is anticipated that the same weather and ice forecast and advisory services will be provided, with some increase in volume of services resulting from establishment of an Arctic Flight Information Region. The value of weather satellite picture relay in the display of ice conditions in arctic areas will be examined and evaluated by an installation at Ottawa and later at Halifax.

It is planned to continue development and extension of the airstrips at Isachsen and Eureka to the dimensions 200 ft. x 6,000 ft. to meet RCAF requirements, and to continue with the addition of fill at Mould Bay so as to minimize the problems of snow drifting and snow removal. Plans are being made for the relocation of the upper air installation at Mould Bay to avoid obstacles which limit the effectiveness of the upper air equipment at its present site. The necessary materials for a new rawin building and filling shelter will be forwarded by summer sea supply to Resolute for later air transport to Mould Bay.

TELECOMMUNICATIONS BRANCH

Responsibilities To provide radio aids to air and marine navigation; to provide radio facilities for various scientific organizations and for meteorological observations; to provide other telecommunication facilities as required; to foster and promote the development of public telecommunication services.

Long-term Plans

To expand on operations as the need arises.

Review of 1963 Operations

Baker Lake, N. W. T.

A high power radiobeacon with voice facilities was installed, replacing the low-power radiobeacon.

Burwash Landing, Y. T.

Site selection and survey work were completed for an aeradio station comprising operations building, radio range, transmitter site, power-house and staff accommodation so that major construction can begin in 1964, for completion in 1965.

Cambridge Bay

Weather service to pilots flying in this area was improved. Twice hourly weather broadcasts over the high power radiobeacon transmitter were begun. Ship-shore communications were improved by the addition of a 2 Mc/s frequency on radiotelephone.

Cape Dorset, N. W. T.

A non-directional beacon was established to serve Cape Dorset airstrip.

Coral Harbour

MF ship-shore frequencies were installed for communications with resupply vessels.

Eskimo Point

A new combined marine-aeronautical radiobeacon was commissioned.

Flin Flon

A new aeronautical radiobeacon was commissioned.

Fort Good Hope, N. W. T.

Rehabilitation of the power distribution system and installation of metering for community services were completed.

Frobisher Bay, N. W. T.

A remote receiver building acquired from the USAF and renovated for our purposes. The instrument landing system was recommissioned. A radio-teletype circuit was commissioned between Frobisher and Coral Harbour for weather and flight information.

Inuvik

Tests indicated that a radio link with Tuktoyaktuk for weather and flight information was not feasible, and negotiations were begun to provide this service via commercial facilities.

Nottingham, N. W. T.

Materials were stock-piled for erection of storage garage, emergency shelter, operations room, and storehouse.

Rankin Inlet

A new aeronautical radiobeacon was commissioned.

Resolute

Ship-shore radiotelephone facilities were commissioned on 2, 4 and 8 Mc/s.

Uranium City

The airport was connected to the air-operational teletype network.

Whitehorse

An Instrument Landing System was begun and the buildings were completed in November for equipment installation in 1964.

General

Site selection and surveys were made for responder type marine beacons at Mansel Island, Cape Acadia, Ashe Inlet, and Button Island to provide navigational aids to vessels en route to Churchill and engaged in the Arctic sealift. (Installations to be done in 1964).

Twice hourly scheduled weather broadcasts were commenced to assist the flying public in the Fort Resolution and Dawson areas.

Improvements were made to radioteletype circuitry between Fort Smith, Norman Wells, and Inuvik. This dual channel circuitry carries air-operational and commercial wireline company traffic between these locations.

Development of Public Telecommunications Services

Construction of the CNT communications system along the MacKenzie Valley from Fort Providence to Inuvik progressed favourably. The overall planned completion date is now fall of 1965. However, long distance service would be initially available at Fort Simpson by February, 1964, Wrigley by May, 1964, Fort Norman by December, 1964, Norman Wells by February, 1965, Fort Good Hope by May, 1965, and Inuvik plus Fort McPherson and Aklavik by September, 1965.

Extension of standard commercial service into Uranium City was achieved in May, 1963.

The CNT system between Hay River and Lady Franklin Point was made ready for operation January 1, 1964.

CNT established a dial telephone exchange at Cambridge Bay on November 1, 1963. It is expected that long distance telephone service will be extended to this location early in 1964.

Continued provision of long distance public and private line services to Frobisher was achieved by engaging CNT as operator of the former USAF-owned Frobisher Polevault terminal effective October 1, 1963. DOT acquired ownership of this former USAF-owned terminal.

The Bell Telephone Company established a radiotelephone base station at Frobisher.

Plans for 1964

Dawson City, Y. T.

Four new dwelling units to replace old buildings acquired from RCCS are to be constructed.

Fort Good Hope, N. W. T.

Cold storage facilities to hold the annual resupply shipment and extra fuel tanks to hold an additional 30,000 gallons of fuel are scheduled; also renovation of non-directional beacon.

Frobisher

Arrangements are underway to relocate the telecommunications operations to new quarters in the ex-SAC Composite Building. Targeted for completion in 1964. A voice communication circuit is being established between Frobisher and Resolute and this will be converted to a radio-teletype circuit (protected by error correcting equipment).

Inuvik, N. W. T.

A localizer (approach and landing aid) is to be established. To be completed in 1965.

Yellowknife

A radio range is to be built to replace a facility destroyed by fire.

General

Single sideband voice communication circuits are to be established between the joint Arctic weather stations at Alert, Eureka, Isachsen and Mould Bay and a base station at Resolute. Air ground communications are to be established at two of the JAWS stations in connection with flight information service.

The weather station at Banks Island (Sachs Harbour) is also to be provided with voice communication to Resolute.

DEPARTMENT OF TRANSPORT (MARINE)

DEPARTMENT OF TRANSPORT (MARINE)

MARINE OPERATIONS BRANCH

Responsibilities Provision of transportation facilities and co-ordination of cargo and passenger requirements for government agencies; provision of aids to navigation in Hudson Bay, Hudson Strait and Goose Bay; rendering icebreaker assistance wherever and whenever required; provision of stevedoring facilities at the Port of Goose Bay, Labrador, where over 21, 000 net tons of cargo was handled.

Long-term Plans

Continuing to improve marine work in the north; planning to meet anticipated additional resupply requirements.

Review of 1963 Operations

The following vessels were engaged in northern transportation.

CANADIAN COAST GUARD SHIPS

<u>Vessel</u>	<u>Voyage</u>	<u>Cargo in lbs.</u>
CCGS "Auk"	Montreal - Baffin Island	120, 940
CCGS "Gannet"	Montreal - Baffin Island	622, 616
CCGS "C.D. Howe"	Arctic Wayports	6, 080
	Churchill - various	161, 262
	Montreal - various	1, 397, 802
CCGS "d'Iberville"	Montreal - various	663, 436
	Various - Quebec City	83, 840
	Montreal - Arctic Bay	140, 525
CCGS "Eider"	Churchill-Rankin Inlet, Voy. 1	1, 030, 278
	Churchill-Rankin Inlet, Voy. 2	1, 131, 922
	Churchill-Rankin Inlet, Voy. 3	1, 113, 675
	Churchill-Chesterfield, Voy. 3	126, 327
	Churchill-Rankin Inlet, Voy. 4	883, 906
	A Churchill-Master, Voy. 4	122, 602

<u>Vessel</u>	<u>Voyage</u>	<u>Cargo in lbs.</u>
	Churchill-Baker Lake	
	Voy. 5	1, 193, 958
	Churchill-Eskimo Point	
	Voy. 5	36, 606
	Churchill-Baker Lake	
	Voy. 6	845, 064
	Churchill-Chesterfield,	
	Voy. 6	180, 195
	Churchill-Whale Cove,	
	Voy. 7	797, 696
	★ Churchill-Master,	
	Voy. 7	81, 522
	Montreal-Goose Bay	137, 315
CCGS "Camsell"	Victoria - Western Arctic	60, 000
CCGS "John A. Macdonald"	Montreal - various	1, 705, 275
	Various - Quebec City	113, 800
CCGS "Labrador"	Halifax - Cape Hopes Advance	284, 217
	Churchill - Grise Fiord	100
	M.V. "Eskimo" - Cape	
	Hooper	217, 366
	Various - Halifax	171, 320
CCGS "N. B. McLean"	Montreal - various	531, 929
	Churchill - various	2, 973, 764
	Churchill - various	61, 919
	Various - Quebec	122, 628
CCGS "Montreal"	Montreal - various	545, 085
	Churchill - various	1, 255, 378
	Various - Quebec	33, 815
	Hall Beach - Igloolik	624, 593
CCGS "Marmot"	Montreal - Labrador sites	160, 175
	Frobisher Bay - Quebec	2, 375
CCGS "Narwhal"	Quebec - various	8, 323
CCGS "Mink"	Montreal - various	221, 415
	Various wayports	294, 052
	Various - Quebec	90, 155
CCGS "Puffin"	Montreal - M.C.L. sites	749, 764
	Churchill - various	770, 716
	Montreal - Labrador sites	1, 082, 330
	M.C.L. sites to Montreal	244, 125

<u>Vessel</u>	<u>Voyage</u>	<u>Cargo in lbs.</u>
CCGS "Raven"	Montreal - Great Whale River	562, 729
	Churchill - Winisk	635, 292
	Churchill - Rankin Inlet	859, 481
	Churchill - various	1, 064, 837
	Various wayports	1, 098, 222
CCGS "Sir H. Gilbert"	Halifax - various	632, 310
	Churchill - various	443, 614
	A Churchill - Master	807, 862
CCGS "Skua"	Montreal - Goose, etc.	120, 078
	Churchill - Chesterfield, Voy. 1	873, 873
	Churchill-Coral Harbour, Voy. 2	842, 000
	Churchill-Rankin Inlet, Voy. 3	1, 722, 117
	Churchill-Coral Harbour, Voy. 4	1, 061, 735
	Goose Bay - Montreal	40, 000
	CCGS "Simon Fraser" A Churchill - Master	385, 678
CCGS "Sir H. Gilbert"	Frobisher - Halifax	3, 000
CCGS "Auk"	Northern Ports-Frobisher Bay	50, 000
	Frobisher Bay-Montreal	60, 000
CCGS "C. D. Howe"	Frobisher Bay - Montreal	16, 000
CCGS "Auk"	Frobisher Bay-Pangnirtung & Resolution Is.	190, 000
LCM's	Goose to N. West River	620, 000
CCGS "Puffin"	Winisk - Cape Jones	26, 000
	Winisk - Great Whale River	60, 100
	Bear Island - Winisk	42, 000
	Cape Jones - Great Whale River	27, 000
	Bear Island - Churchill	500
	Great Whale River - Churchill & Whale Cove	3, 000
	Great Whale River - Coast sites	45, 000

<u>Vessel</u>	<u>Voyage</u>	<u>Cargo in lbs.</u>
	Great Whale River - Winisk	45,000
	Winisk - Great Whale River	500
	Great Whale River - Winisk	300
	Winisk - Montreal	206,000
	Great Whale River - Quebec	64,000
CCGS "Raven"	Great Whale River - Winisk	367,000
	Great Whale River - Cape Jones	36,400
	Winisk - Moosenee	32,000
	Moosenee - Winisk	1,000
	Moosenee - Great Whale River	40,000
	Moosenee - Povungnituk & Port Harrison	23,000
CCGS "Mink"	Great Whale River - Belchers	145,000
	S. Belchers - Great Whale River	26,000
	N. Belchers - Great Whale River	74,000
	Great Whale River - Port Harrison	14,000
	Great Whale River - Payne Bay	1,000
	Great Whale River - Quebec	87,000
	Port Harrison - Northern Ports	30,000
CCGS "Montcalm"	Great Whale River - Quebec	33,000
CCGS "Skua"	Goose Bay - Cartwright	4,000
	Cartwright - Goose Bay	27,000
Various	Baffin Island Lateral Cargo	978,600
	Foxe Basin Lateral Cargo	<u>3,152,600</u>

Total C.C.G. Ships - 41,625,014

or, 20,812.5 s/tons

CHARTER AND COMMERCIAL VESSELS

<u>Vessel</u>	<u>Voyage</u>	<u>Cargo in lbs.</u>
"Canuk Trader"	Montreal - various	9, 931, 381
	Churchill - Montreal	5, 040
	Hall Beach - Montreal	652, 869
"C.A. Crosbie"	Montreal - Ft. Chimo	628, 000
	Montreal - George River	716, 768
	Montreal - Frobisher Bay	398, 484
	Montreal - Payne Bay	681, 327
	Frobisher Bay - Montreal	17, 520
"Dealbrook"	Montreal - Foxe & Baffin	24, 721, 894
"Eskimo"	Montreal - Baffin sites	3, 827, 829
	Various - Montreal	420, 739
"Farrandoc"	Montreal - Various	2, 166, 734
	Various - Montreal	188, 843
"Federal Pioneer"	Montreal - Resolute Bay	5, 192, 830
	Montreal - Frobisher Bay	1, 615, 539
	Resolute Bay - Montreal	681, 313
	Frobisher Bay - Montreal	576, 588
"Fort Albany"	Montreal to Sugluk	995, 678
	Montreal - various	272, 496
	Various - Montreal	76, 260
"Guard Mavoline"	Montreal - Frobisher	678, 593
"J. Edouard Simard"	Montreal - Resolute Bay	13, 602, 940
	Churchill to M.C.L.	15, 502, 961
"Keta"	Montreal - Various	2, 093, 693
	Wayports - Various	404, 811
"Maridan C"	Montreal - Various	1, 006, 614
"Nfld. Cruiser"	Montreal - Cape Dr set	1, 265, 535
"O.K. Service XI"	George River - Montreal	17, 760
	Montreal - Various	494, 954
	Montreal - Various	276, 808
	Montreal - Baker Lake	1, 098, 341
	Baker & Coral - Montreal	183, 524
"Pierre Radisson"	Montreal - Various	317, 482

<u>Vessel</u>	<u>Voyage</u>	<u>Cargo in lbs.</u>
"Ste. Foy"	Montreal - Frobisher Bay	1, 105, 092
	Frobisher Bay - Montreal	120, 995
"Sir John Crosbie"	Fort Chimo - Montreal	93, 512
	Montreal - Fort Chimo	185, 158
	Montreal - Gap sites	2, 240, 004
	Montreal - Alert via Thule	1, 418, 989
	Goose - Montreal	258, 589
	Goose - St. John's, Nfld.	131, 337
	Goose - Gap Pine	1, 524, 292
	Various wayports	454, 716
	Goose - Gap Pine	87, 469
	Various wayports	959, 746
"Theron"	Montreal - Various	524, 390
	Montreal - Frobisher Bay	20, 920
"Vega"	Rankin - Montreal	22, 804
	Montreal - Various	706, 216
	Montreal - Various	264, 329
"Woodcock"	Rimouski - Hopedale	66, 963
	Montreal - Cartwright	191, 948
	Montreal - Hopedale	120, 653
	Montreal - Frobisher Bay	1, 092, 000
Various	Transfer of cargo at Resolute	632, 400
"C.A. Crosbie"	Frobisher Bay - Various	1, 616, 000
"Maymere"	Montreal - Frobisher Bay	1, 044, 000
	Frobisher Bay - Various	840, 000
"Saugatuck"	Frobisher Bay - Thule	13, 886, 000
"Sir J. Crosbie"	Frobisher Bay - Various	738, 000
	Montreal - Frobisher Bay	248, 000
"Pierre Radisson"	Montreal - Frobisher Bay	1, 000, 000
"Guard Mavoline"	Frobisher Bay - Montreal	20, 000
"Woodcock"	Frobisher Bay - Montreal	42, 000
"San Rafael"	Frobisher Bay - Goose Bay	11, 200, 000
"Sir John Crosbie"	Frobisher Bay - Goose Bay	260, 000
	Goose Bay - Frobisher Bay	36, 000

<u>Vessel</u>	<u>Voyage</u>	<u>Cargo in lbs.</u>
"Esso Norfolk"	Aruba - Frobisher Bay	30, 540, 000
"Theron"	Frobisher Bay - Montreal	10, 000
"Eskimo"	Various - Frobisher Bay	30, 000
	Frobisher Bay - Montreal	170, 000
"Pierre Radisson"	Frobisher Bay - Northern parts	36, 000
"Theron"	Winisk - Great Whale River	3, 000
"Sea Transport"	Goose Bay to Gap Pine sites	31, 100, 180
"Sir John Crosbie"	Gap Pine - Goose Bay	<u>659, 400</u>
<u>Total-Commercial & Chartered Vessels -</u>		<u>196, 413, 250</u>

or, 98, 206.6 s/tons

TONNAGES 1963 - WESTERN ARCTIC

Arctic Shipping Ltd., & Yellowknife Transportation Co.	- 1, 725 s/tons
Northern Transportation Co. Ltd.	<u>1, 607.5</u> "
	3, 332.5 "

GOOSE BAY

Cargo Discharged and loaded during 1963 season	- 21, 123 s/tons
--	------------------

RECAPITULATION

Canadian Coast Guard Ships.....	20, 812.5 s/tons
Chartered & Commercial Ships.....	98, 206.6 "
Western Arctic.....	3, 332.5 "
Goose Bay (cargo handling only).....	<u>21, 123.6</u> "
Grand total -	143, 475.2 "

LESS - Frobisher Bay bulk oil.....27, 813.000 s/t

A - Bunkers delivered to CCGShips
at Churchill..... 3, 153.373 "
(see footnote)

30, 966.373

30, 966.4

Actual cargo total

- 112, 508.8 s/tons

A cargo was again delivered to Thule, Greenland, for the Canadian Army, Department of Transport, and other agencies. The Weather Stations at Resolute, Mould Bay and Isachsen were serviced by convoy to Resolute Bay, and by the CCGS "John A. Macdonald" to Sherwood Head and Eureka. Direction finding stations were calibrated. The CCGS "Labrador" assisted in the oceanographic survey of Smith Sound, Baffin Bay and Davis Strait. Commercial shipping to Churchill was assisted by ice breakers of the Fleet. Lighthouse and navigational aids were examined and serviced in Hudson's Bay and Strait. In addition, the CCGS "John A. Macdonald" carried out probes in Barrow Strait and Viscount Melville Sound on completion of Eureka resupply.

Included in the total tonnage is the shipment of bulk oil delivered to Frobisher Bay, in which operation assistance was rendered by the Department of Transport barge personnel during the past season, and also fuel bunker requirements for CCGShips at Churchill.

Plans for 1964

Continued resupply plus scientific work as required by various government departments. Also, continuing stevedoring operations at Goose Bay, Labrador.

AIDS TO NAVIGATION DIVISION

Responsibilities Establishment and maintenance of marine aids to navigation in the Athabasca-Mackenzie water route and in the Western Arctic, Hudson Strait, Hudson Bay, and Frobisher Bay areas which are being expanded to meet the requirements of shipping.

Long-term Plans

Maintenance, operation, and expansion of marine aids to keep pace with expanding shipping requirements. Continuous participation in the Inter-departmental Engineering Committee co-ordinating the activities of government departments in relation to the Athabasca-Mackenzie water route.

Review of 1963 Operations

In the Western Arctic the system of aids was maintained and improved, and buoys were placed in the Cambridge Bay and Simpson Strait areas. Two radar reflector towers were installed: one on Hendriksen Island and the other on Qikirtaajuk Island. Several barrel type daymarks were erected and three wooden towers that had blown over were restored to service.

In the Hudson Strait area a new high intensity navigation light on an aluminum tower was established on Radio Island at the southern end of Resolution Island. A navigation light on an aluminum tower was also established on Goodwin Island (Button Island Group) on the southern side of the entrance to Hudson Strait. A tower mast for a new transponder marine radio beacon was also erected at this location but the beacon will not be commissioned until 1964. A new navigation light on a 50 foot aluminum tower surmounted by a large radar reflector was also established at Cape Acadia on the southern end of Mansel Island. All existing lights and radio beacons were maintained in operation in the Hudson Strait area and improvements were made by the installation of fluorescent painted daymarks on the towers at Cape Hopes Advance, Digges Island and Coats Island.

Improvements in existing aids and the establishment of additional aids

Two sets of range lights and four additional lighted buoys, were placed in Churchill Harbour to permit night navigation for the first time in the history of

the port. The new marine radio beacon at Eskimo Point was commissioned and this provides a useful cross-bearing for navigation courses approaching Churchill Harbour.

The four working parties continued their activities in the Athabasca-Mackenzie water route from Waterways to Tuktoyaktuk and in October, the C.C.G.S. "Tembah" was launched. This will enable a fifth working party to be organized and so provide better service. New lights were established at McKinley Point and Round Island in the Great Slave Lake area as well as one additional lighted buoy. Eight aluminum range beacon towers were also erected in this area. Fifteen additional can buoys and two lighted buoys were placed in the Beaver Lake and Upper Mackenzie River areas. In the Lake Athabasca area, navigation lights on aluminum towers were established on Curtis Island and at the approach to Willows Channel. In addition, two lights were established along the Athabasca River. A number of new cross-over beacons were erected and all existing aids were maintained throughout the waterway system.

Plans for 1964

A special working party will establish new aids in Hudson Strait. In this connection, new transponder radio beacons are proposed for Goodwin Island (Button Island Group), Cape Acadia and Coats Island. A new light is proposed for Cape Pembroke on the north-eastern end of Coats Island.

A transponder marine radio beacon is proposed for Grappling Island at the approach to Hamilton Inlet for the Goose Bay trade.

In the Athabasca-Mackenzie water route it is proposed to have all five working parties on duty and a number of improvements in existing aids and establishment of new aids are planned. In the Western Arctic the C.C.G.S. "Camsell" will again be on patrol and will place and move buoys and minor aids as they are needed by shipping interests.

UNEMPLOYMENT INSURANCE COMMISSION

Responsibilities Administration of the Unemployment Insurance Act, including operation of an employment service, through the Commission's local office at Whitehorse, Yukon Territory.

Long-term Plans

Study of the problem of applying unemployment insurance in a satisfactory manner to workers in remote northern areas.

Review of 1963 Operations

Through the Whitehorse office, 1,348 placements were made. Of these, 1,227 were of workers within the area and 121 were workers transferred from other areas.

The Whitehorse office handled 2,204 claims for unemployment insurance benefit and disbursed a total of \$395,517. This included claims handled by agents acting on behalf of the Commission at Dawson (87 claims) and Mayo Landing (26 claims). In the Northwest Territories, agents operated at Fort Smith (25 claims), Hay River (77 claims) and Inuvik (8 claims).

Plans for 1964

The continued normal operation of the employment and unemployment insurance services already in existence.

TREASURY OFFICE

NORTHERN AFFAIRS AND NATIONAL RESOURCES

Revenue and Expenditures in the Northwest Territories

and the Yukon Territory

Fiscal Year 1962-63

<u>Department</u>	<u>Northwest Territories</u>		<u>Yukon Territory</u>	
	<u>Revenues</u>	<u>Expenditures</u>	<u>Revenues</u>	<u>Expenditures</u>
Agriculture	2, 213.63	67, 541.50	8, 432.64	159, 952.20
Chief Electoral Officer	200.00	48, 402.93	-	9, 833.05
Citizenship and Immigration	-	6, 445.00	-	14, 615.61
Indian Affairs	-	697, 812.33	-	672, 965.00
Finance	-	1, 637, 286.90	-	2, 097, 581.39
Fisheries	11, 306.85	189, 496.03	10, 564.89	27, 747.03
Justice	197, 044.00	238, 178.00	189, 017.00	178, 584.00
Labour	-	115, 105.62	-	546, 302.75
Mines and Technical Surveys	463.50	550, 825.97	2, 037.30	298, 856.01
National Defence	-	3, 055, 999.00	-	6, 346, 089.00
National Health and Welfare	508, 539.30	5, 723, 976.16	717, 644.57	2, 197, 974.43

<u>Department</u>	<u>Northwest Territories</u>		<u>Yukon Territory</u>	
	<u>Revenue</u>	<u>Expenditures</u>	<u>Revenues</u>	<u>Expenditures</u>
National Revenue	-	-	3, 314, 170.66	215, 670.42
▲ Northern Affairs and National Resources	1, 861, 773.06	24, 540, 040.47	526, 722.90	7, 200, 649.11
Northern Canada Power Commission	2, 817, 756.00	2, 796, 254.00	903, 688.00	205, 776.00
Post Office	122, 599.88	735, 502.97	162, 513.65	702, 602.56
Public Print- ing and Stationery	-	3.57	-	236.15
Public Works	401, 684.00	935, 735.00	218, 874.00	458, 714.00
Royal Canadian Mounted Police	135, 172.23	1, 596, 920.26	38, 729.07	552, 370.21
Soldier Settle- ment and Veterans' Land Act	-	8, 667.00	-	29, 429.00
Trade and Commerce	1, 319.65	810.05	3, 063.00	2, 375.57
Transport	551, 759.69	7, 557, 303.52	119, 404.77	1, 431, 789.36
Unemployment Insurance Commission	-	-	-	51, 580.60
	6, 611, 831.79	50, 502, 306.28	6, 214, 862.45	23, 401, 693.45

★ Expenditures in the Northwest Territories included the write-off of loans made to the Northern Canada Power Commission under the Northern Canada Power Commission Act for the construction and installation of central heating, water and sewage and fire alarm system at Inuvik, \$7,003,914.96.

GOVERNMENT EMPLOYEES IN THE NORTHWEST TERRITORIES

D E P A R T M E N T O R A G E N C Y	N U M B E R O F E M P L O Y E E S			
	Full Time	Seas- onal	Part Time	TOTAL
Agriculture	19	12	16	47
Air Transport Board	-	-	-	-
Cdn. Broadcasting	28	-	16	44
Central Mortgage & Housing	-	-	-	-
<u>Citizenship & Immigration</u>				
Immigration	1	-	-	1
Indian Affairs	45	-	-	45
Total	46	-	-	46
Crown Assets Disp. Corp.	-	-	3	3
Dominion Bureau of Statistics	-	-	-	-
Eldorado Mining	6	-	-	6
External Affairs	-	-	-	-
<u>Fisheries</u>				
Conservation, Development & Inspection Services	15	4	4	23
Fisheries Research Board	2	29	-	31
Total	17	33	4	54
Forestry	-	3	1	4
Justice	14	-	-	14
Labour	-	-	-	-
<u>Mines and Technical Surveys</u>				
Dominion Observaties	6	21	6	33
Geographical Branch	8	13	7	28
Geological Survey	6	91	10	107
Mines Branch	-	-	-	-
Polar Continental Shelf Project	1	78	-	79
Surveys and Mapping Branch	-	91	18	109
Interdept. Cttee. on Air Surveys	-	-	-	-
Marine Sciences	-	-	-	-
Total	21	294	41	356
<u>National Defence</u>				
Navy	156	9	-	165
Army	987	252	-	1239
Air Force	444	19	38	501
Defence Research Board	1	-	4	5
Total	1588	280	42	1910
National Film Board	-	-	2	2
<u>National Health and Welfare</u>				
Health	300	-	-	300
Welfare	-	-	-	-
Total	300	-	-	300

AND THE YUKON TERRITORY

LOCATION OF FULL TIME EMPLOYEES

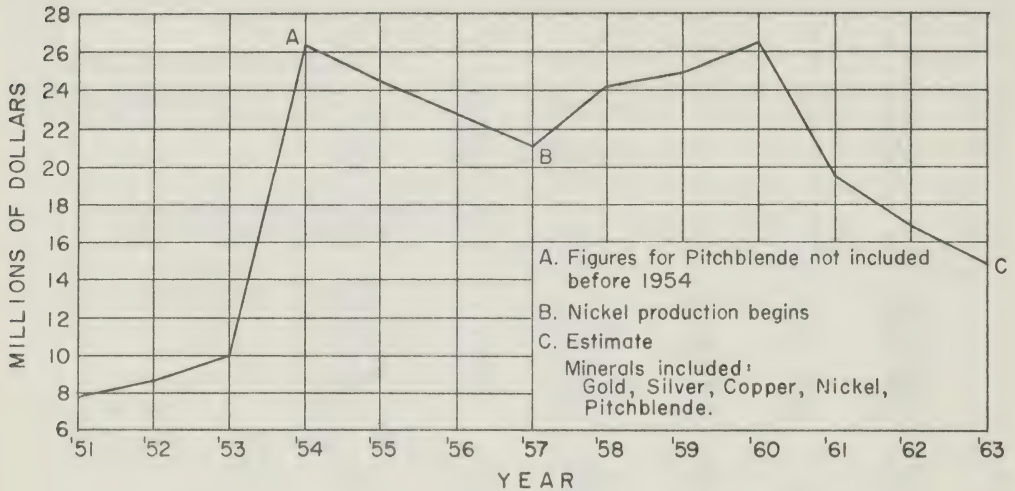
Q. E. Isl.	Northwest Territories		Mack- enzie	Yukon	TOTAL	REMARKS
	Rest of Frankl.	Kee- watin				
-	-	-	7	12	19	
-	-	-	-	-	-	
-	5	-	15	8	28	
-	-	-	-	-	-	
-	-	-	-	1	1	
-	-	-	19	26	45	
-	-	-	19	27	46	
-	-	-	-	-	-	
-	-	-	-	-	-	
-	-	-	6	-	6	
-	-	-	-	-	-	
-	-	-	13	2	15	
-	-	-	2	-	2	
-	-	-	15	2	17	
-	-	-	-	-	-	
-	-	-	6	8	14	
-	-	-	-	-	-	
5	-	1	-	-	6	
1	5	-	2	-	8	
-	-	-	3	3	6	
-	-	-	-	-	-	
1	-	-	-	-	1	
-	-	-	-	-	-	
-	-	-	-	-	-	
-	-	-	-	-	-	
7	5	1	5	3	21	
21	115	-	120	-	156	
-	-	-	-	987	987	
85	15	-	5	339	444	
1	-	-	-	-	-	
107	30	-	125	1326	1588	
-	-	-	-	-	-	
-	37	12	132	119	300	
-	-	-	-	-	-	
-	37	12	132	119	300	

D E P A R T M E N T O R A G E N C Y	N U M B E R O F E M P L O Y E E S			
	Full Time	Seas- onal	Part Time	TOTAL
National Research Council	3	4	2	9
<u>National Revenue</u>				
Customs and Excise	7	-	-	7
Taxation	<u>13</u>	<u>2</u>	<u>2</u>	<u>17</u>
Total	<u>20</u>	<u>2</u>	<u>2</u>	<u>24</u>
<u>Northern Affairs and Nat. Resources</u>				
Canadian Wildlife Service	4	-	1	5
National Museum	-	6	4	10
<u>Northern Admin. Branch</u>				
Administrator of the Arctic	213	-	-	213
Administrator of the Mackenzie	527	60	231	818
Administrator of the Yukon	<u>51</u>	<u>11</u>	<u>21</u>	<u>83</u>
Total for N.A. Branch	<u>791</u>	<u>71</u>	<u>252</u>	<u>1114</u>
Northern Co-ordination and Research Centre	-	2	-	2
Total for N.A.N.R.	869	79	257	1205
Northern Canada Power Commission	99	-	-	99
<u>Northern Transportation</u>				
Company Limited	4	293	70	367
Post Office	87	-	8	95
Public Works	60	325	20	405
R.C.M. Police	194	-	-	194
<u>Transport</u>				
Air Services	580	70	-	650
Marine Services	-	1215	-	1215
Total	<u>580</u>	<u>1285</u>		<u>1865</u>
Unemployment Insurance Commission	<u>8</u>	<u>-</u>	<u>8</u>	<u>16</u>
Grand Total, 1963	3889	1325	1777	6991
Grand Total, 1962	<u>3778</u>	<u>2497</u>	<u>449</u>	<u>6724</u>
Difference	+111	-1172	+1328	+267

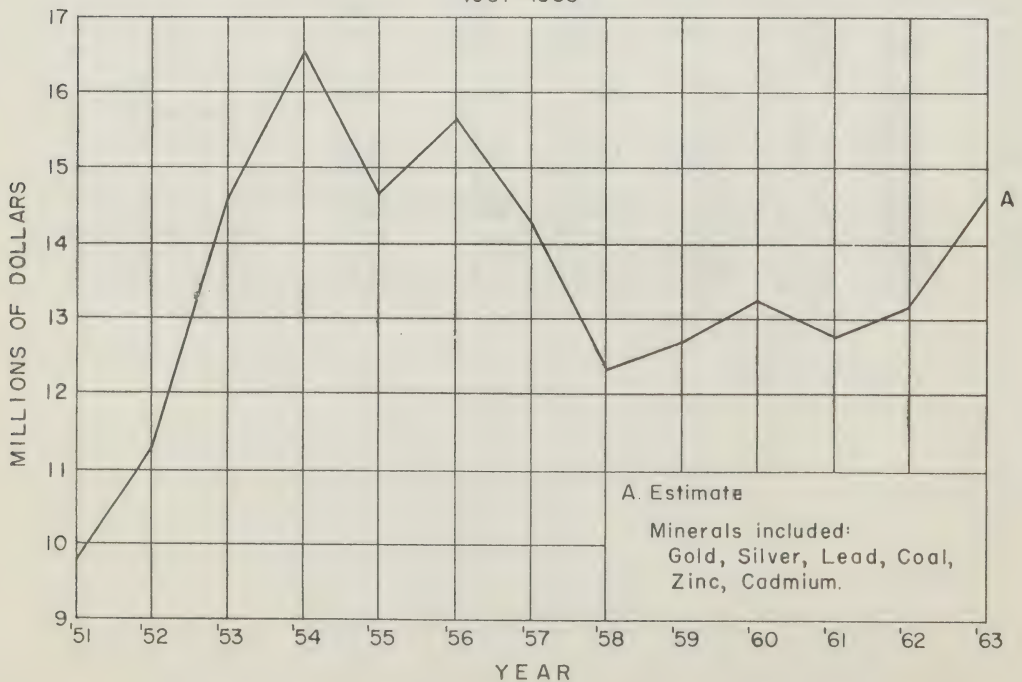
LOCATION OF FULL-TIME EMPLOYEES

Q.E. Isl.	<u>Northwest Territories</u>		Mack- enzie	Yukon	TOTAL	REMARKS
	Rest of Frankl.	Kee- watin				
2	-	1	-	-	3	
-	-	-	-	7	7	
-	-	-	-	<u>13</u>	<u>13</u>	
-	-	-	-	<u>20</u>	<u>20</u>	
-	-	-	3	1	4	
-	-	-	-	-	-	
4	121	888	-	-	213	
-	16	2	509	-	527	
-	-	-	-	<u>51</u>	<u>51</u>	
<u>4</u>	<u>137</u>	<u>90</u>	<u>509</u>	<u>51</u>	<u>791</u>	
-	-	-	-	-	-	
4	137	90	512	52	795	
-	11	-	73	15	99	
-	-	-	4	-	4	
5	10	6	29	37	87	
-	-	-	18	42	60	
9	31	15	87	52	194	
44	186	41	177	132	580	
-	-	-	-	-	-	
<u>44</u>	<u>186</u>	<u>41</u>	<u>177</u>	<u>132</u>	<u>580</u>	
-	-	-	-	<u>8</u>	<u>8</u>	
<u>178</u>	<u>452</u>	<u>166</u>	<u>1230</u>	<u>1863</u>	<u>3889</u>	
<u>148</u>	<u>432</u>	<u>139</u>	<u>1197</u>	<u>1862</u>	<u>3778</u>	
<u>+30</u>	<u>+20</u>	<u>+27</u>	<u>+33</u>	<u>+1</u>	<u>+111</u>	

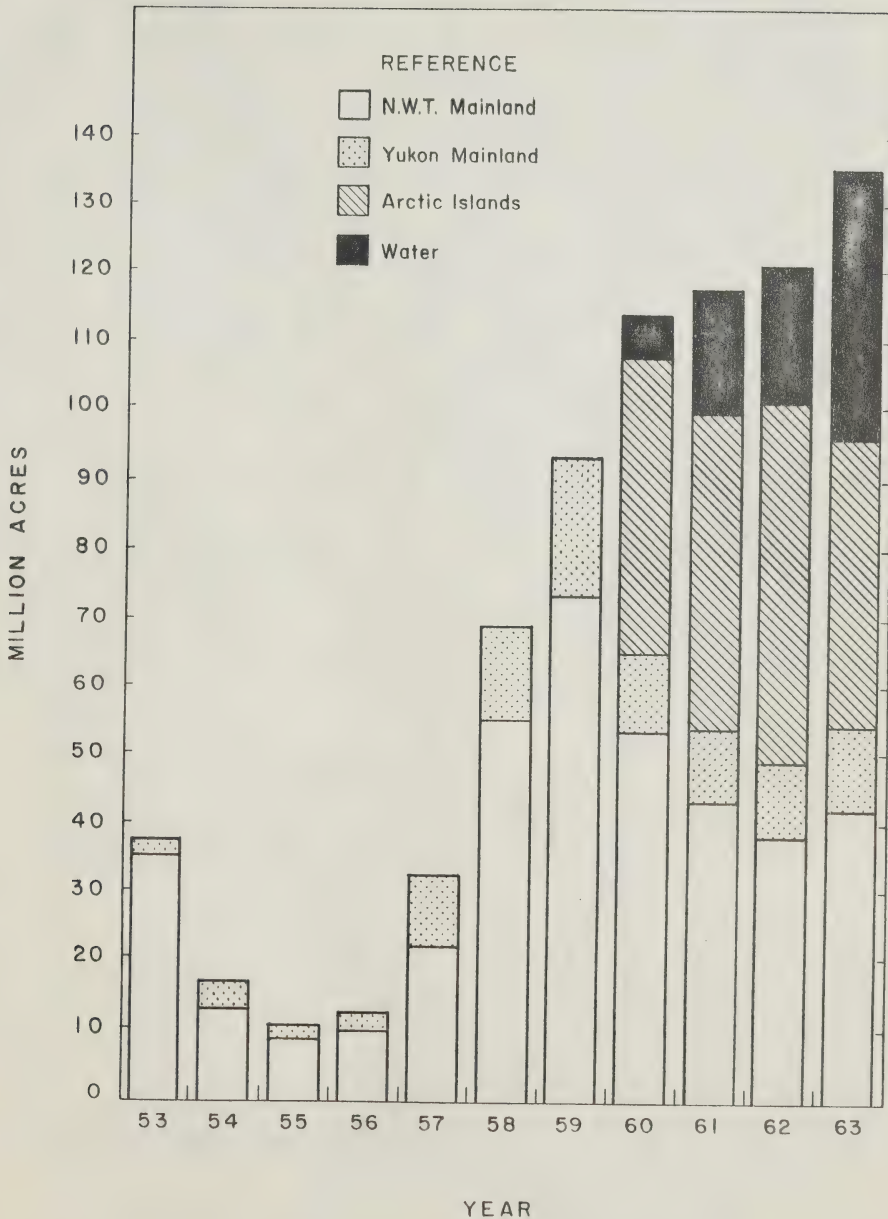
VALUE OF MINERAL PRODUCTION
NORTHWEST TERRITORIES
1951-1963

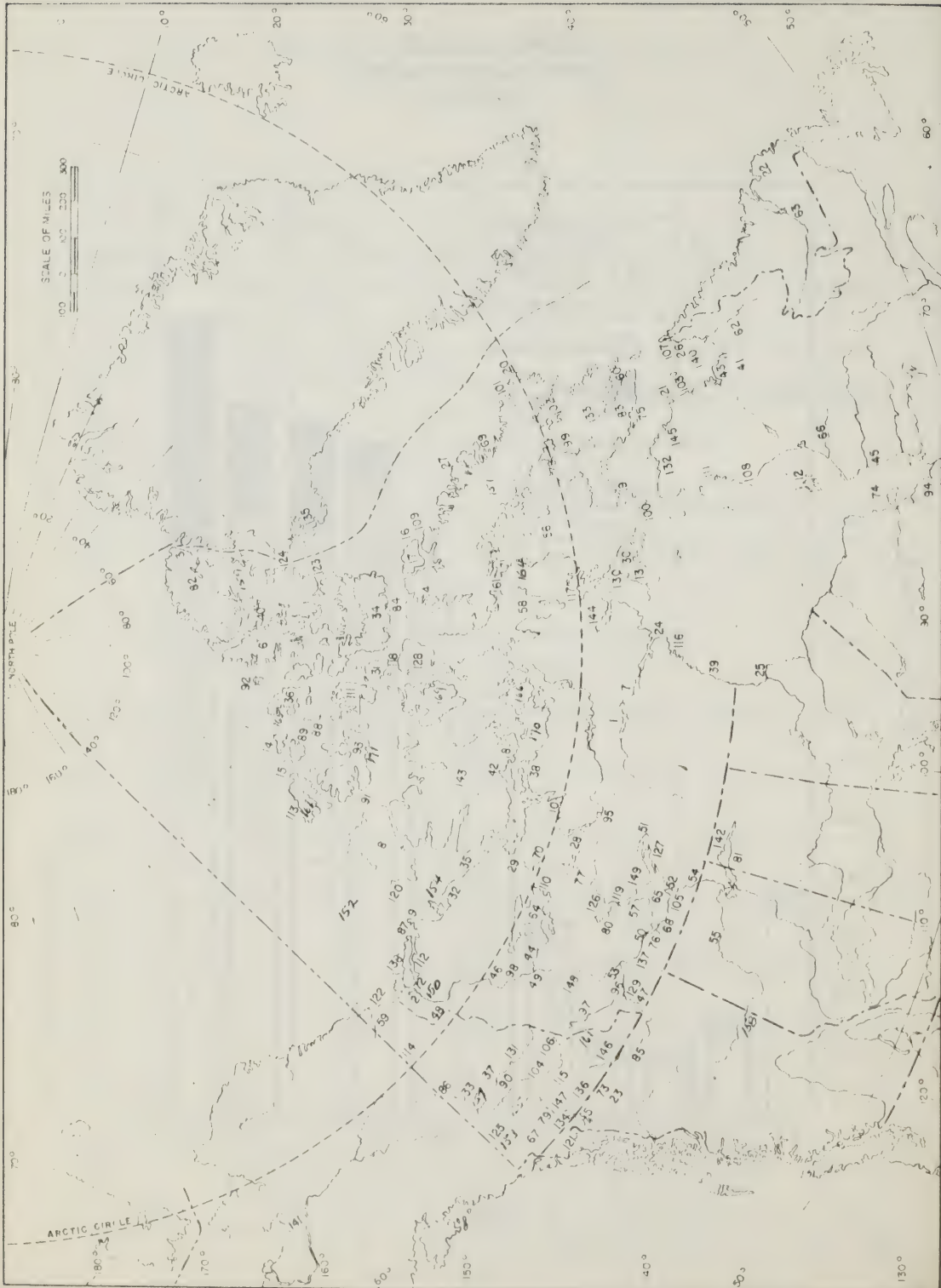


VALUE OF MINERAL PRODUCTION
YUKON TERRITORY
1951-1963



CANADA LANDS
Oil and Gas Permits Active
1953-1963





LEGEND

- | | |
|------------------------------|---------------------------|
| 1. Aberdeen Lake | 51. Fort Reliance |
| 2. Aklavik | 52. Fort Resolution |
| 3. Alert | 53. Fort Simpson |
| 4. Arctic Bay | 54. Fort Smith |
| 5. Atlin Lake | 55. Fort Vermilion |
| 6. Axel Heiberg Island | 56. Foxe Basin |
| 7. Baker Lake | 57. Frank Channel |
| 8. Banks Island | 58. Franklin Bay |
| 9. Bathurst Cape | 59. Firth River |
| 10. Bathurst Inlet | 60. Frobisher Bay |
| 11. Bathurst Island | 61. Fury and Hecla Strait |
| 12. Belcher Island | 62. George River |
| 13. Boas River | 63. Goose Bay |
| 14. Borden Island | 64. Great Bear Lake |
| 15. Brock Island | 65. Great Slave Lake |
| 16. Button Point | 66. Great Whale River |
| 17. Bylot Island | 67. Haines Junction |
| 18. Cambridge Bay | 68. Hay River |
| 19. Cape Dorset | 69. Home Bay |
| 20. Cape Dyer | 70. Husky Lakes |
| 21. Cape Hopes Advance | 71. Igloodik |
| 22. Cartwright | 72. Inuvik |
| 23. Cassiar | 73. Iron Creek |
| 24. Chesterfield Inlet | 74. James Bay |
| 25. Churchill | 75. Juet Island |
| 26. Coates Inlet | 76. Kakisa River |
| 27. Cape Christian | 77. Knob Lake |
| 28. Contwoyto Lake | 78. Koukdjuak River |
| 29. Coppermine | 79. Laberge Lake |
| 30. Coral Harbour | 80. Lac La Martre |
| 31. Cornwallis Island | 81. Lake Athabasca |
| 32. Darnley Bay | 82. Lake Hazen |
| 33. Dawson | 83. Lake Harbour |
| 34. Devon Island | 84. Lancaster Sound |
| 35. Dolphin and Union Strait | 85. Liard River |
| 36. Ellef Ringnes Island | 86. Little Gold Creek |
| 37. Elsa | 87. Liverpool Bay |
| 38. Enterprise Cape | 88. Lougheed Island |
| 39. Eskimo Point | 89. Mackenzie King Island |
| 40. Eureka | 90. Mayo |
| 41. False River | 91. McClure Strait |
| 42. Ferguson Lake | 92. Meighen Island |
| 43. Fort Chimo | 93. Melville Island |
| 44. Fort Franklin | 94. Moosonee |
| 45. Fort George | 95. Muskox Lake |
| 46. Fort Good Hope | 96. Nahanni Butte |
| 47. Fort Liard | 97. Nahanni River |
| 48. Fort McPherson | 98. Norman Wells |
| 49. Fort Norman | 99. Nettilling Lake |
| 50. Fort Providence | 100. Nottingham Island |

- | | |
|----------------------------|-----------------------------|
| 101. Padloping Island | 133. Sylvia Grinnell River |
| 102. Pangnirtung | 134. Tagish |
| 103. Payne Bay | 135. Thule |
| 104. Pelly River | 136. Teslin |
| 105. Pine Point | 137. Trout Rock |
| 106. Pleasant Camp | 138. Tuktoyaktuk |
| 107. Port Burwell | 140. Ungava Bay |
| 108. Port Harrison | 141. Unalakleet |
| 109. Pond Inlet | 142. Uranium City |
| 110. Port Radium | 143. Victoria Island |
| 111. Povungnituk | 144. Wager Bay |
| 112. Ptarmigan Point | 145. Wakeham Bay |
| 113. Prince Patrick Island | 146. Watson Lake |
| 114. Old Crow | 147. Whitehorse |
| 115. Quiet Lake | 148. Wrigley |
| 116. Rankin Inlet | 149. Yellowknife |
| 117. Repulse Bay | 150. Arctic Red River |
| 118. Resolute | 151. Baffin Island |
| 119. Rae | 152. Beaufort Sea |
| 120. Sachs Harbour | 153. Beaver Creek |
| 121. Skagway | 154. Cape Parry |
| 122. Shingle Point | 155. Carmacks |
| 123. Smith Bay | 157. Dawson City |
| 124. Smith Sound | 158. Dawson Creek |
| 125. Snag | 159. Ellesmere Island |
| 126. Snare River | 161. Flat River |
| 127. Snowdrift | 164. Hall Lake |
| 128. Somerset Island | 165. Isachsen |
| 129. South Hahanni | 166. King William Island |
| 130. Southampton Island | 167. Mould Bay |
| 131. Stewart River | 169. Prince of Wales Island |
| 132. Sugluk | 170. Queen Maud Gulf |
| | 171. Winter Harbour |

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